



# SEQUENCE LISTING

<110> Korneluk, Robert G.  
MacKenzie, Alexander E.  
Baird, Stephen

---

<120> Mammalian IAP Gene Family, Primers,  
Probes, and Detection Methods

<130> 07891/003005

<140> US 09/654,743

<141> 2000-09-01

<150> US 08/576,956

<151> 1995-12-22

<150> US 08/511,485

<151> 1995-08-04

<160> 92

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 46

<212> PRT

<213> Artificial Sequence

<220>

<223> based on Homo sapiens, Mus musculus, Cydia  
pomonella, Orgyia pseudotsugata, and Drosophila  
melanogaster.

<221> VARIANT

<222> 8

<223> Xaa= Glu or Asp

<221> VARIANT

<222> 14, 22

<223> Xaa=Val or Ile

<221> VARIANT

<222> 2-7, 9-11, 17-21, 23, 25, 30-32, 34, 35, 38-42, 45

<223> Xaa=any amino acid

<400> 1

Glu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Cys	Lys	Xaa	Cys	Met
1				5					10						15	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Phe	Xaa	Pro	Cys	Gly	His	Xaa	Xaa	Xaa	
			20					25					30			
Cys	Xaa	Xaa	Cys	Ala	Xaa	Xaa	Xaa	Xaa	Xaa	Cys	Pro	Xaa	Cys			
		35					40						45			

<210> 2

<211> 68

<212> PRT  
<213> Artificial Sequence

<220>

<223> based on Homo sapiens, Mus musculus, Cydia  
pomonella, ~~Orgyia pseudotsugata~~, and ~~Drosophila~~  
melanogaster.

<221> VARIANT

<222> 13, 16, 17

<223> Xaa= any amino acid or is absent.

<221> VARIANT

<222> 1-12,14-15,18-68

<223> Xaa=any amino acid

<400> 2

Xaa	Xaa	Xaa	Arg	Leu	Xaa	Thr	Phe	Xaa	Xaa	Trp	Pro	Xaa	Xaa	Xaa	Xaa
1				5					10					15	
Xaa	Xaa	Xaa	Xaa	Xaa	Leu	Ala	Xaa	Ala	Gly	Phe	Tyr	Tyr	Xaa	Gly	Xaa
			20					25					30		
Xaa	Asp	Xaa	Val	Xaa	Cys	Phe	Xaa	Cys	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Trp
		35					40					45			
Xaa	Xaa	Xaa	Asp	Xaa	Xaa	Xaa	Xaa	Xaa	His	Xaa	Xaa	Xaa	Xaa	Pro	Xaa
	50					55					60				
Cys	Xaa	Phe	Val												
65															

<210> 3

<211> 2540

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (1)...(2540)

<223> n=a, t, c, or g.

<400> 3

gaaaagggtgg	acaagtccta	ttttcaagag	aagatgactt	ttaacagttt	tgaaggatct	60
aaaacttggtg	tacctgcaga	catcaataag	gaagaagaat	ttgtagaaga	gtttaataga	120
ttaaaaactt	ttgctaattt	tccaagtgg	agtcctgttt	cagcatcaac	actggcacga	180
gcagggtttc	tttatactgg	tgaaggagat	accgtgcggt	gctttagttg	tcatgcagct	240
gtagatagat	ggcaatatgg	agactcagca	gttggaagac	acaggaaagt	atccccaat	300
tgcagattta	tcaacggctt	ttatcttgaa	aatagtcca	cgcagtctac	aaattctggt	360
atccagaatg	gtcagtacaa	agttgaaaac	tatctgggaa	gcagagatca	ttttgcctta	420
gacaggccat	ctgagacaca	tgcagactat	cttttgagaa	ctgggcaggt	tgtagatata	480
tcagacacca	tatacccgag	gaaccctgcc	atgtattgtg	aagaagctag	attaaagtcc	540
tttcagaact	ggccagacta	tgtcaccta	acccaagag	agttagcaag	tgtctggactc	600
tactacacag	gtattggtga	ccaagtgcag	tgcttttggt	gtgggtggaaa	actgaaaaat	660
tgggaacctt	gtgatcgtgc	ctgggtcagaa	cacaggcgac	actttcctaa	ttgcttcttt	720
gttttgggcc	ggaatcttaa	tattcgaagt	gaatctgatg	ctgtgagttc	tgataggaat	780
ttcccaaatt	caacaaatct	tccaagaaat	ccatccatgg	cagattatga	agcacggatc	840
tttacttttg	ggacatggat	atactcagtt	aacaaggagc	agcttgcaag	agctggattt	900
tatgcttttag	gtgaagggtga	taaagtaaa	tgctttcact	gtggaggagg	gctaactgat	960
tgggaagcca	gtgaagaccc	ttgggaacaa	catgctaaat	ggatatccagg	gtgcaaatat	1020
ctgttagaac	agaagggaca	agaatatata	aacaatatc	atttaactca	ttcacttgag	1080
gagtgtctgg	taagaactac	tgagaaaaca	ccatcactaa	ctagaagaat	tgatgatacc	1140

```

atcttccaaa atcctatggt acaagaagct atacgaatgg gggttcagttt caaggacatt 1200
aagaaaataa tggaggaaaa aattcagata tctgggagca actataaatc acttgagggtt 1260
ctgggttcag atctagttaa tgctcagaaa gacagtatgc aagatgagtc aagtcagact 1320
tcattacaga aagagattag tactgaagag cagctaaggc gcctgcaaga ggagaagctt 1380
tgcaaaatct gtatggatag aaatattgct atcgtttttg ttccttggtg acatctagtc 1440
acttgtaaac aatgtgctga agcagttgac aagtgtccca tgtgetacac agtcattact 1500
ttcaagcaaa aaatttttat gtcttaatat aactctatag taggcatggt atgttggttct 1560
tattaccctg attgaatgtg tgatgtgaac tgactttaag taatcaggat tgaattccat 1620
tagcatttgc taccaagtag gaaaaaaaaat gtacatggca gtgttttagt tggcaatata 1680
atctttgaat ttcttgattt ttcaggggtat tagctgtatt atccattttt tttactgtta 1740
tttaattgaa accatagact aagaataaga agcatcatat tataactgaa cacaatgtgt 1800
attcatagta tactgattta atttctaagt gtaagtgaat taatcatctg gattttttat 1860
tcttttcaga taggcttaac aaatggagct ttctgtatat aaatgtggag attagagtta 1920
atctcccaaa tcacataatt tgttttgggt gaaaaaggaa taaattgttc catgctgggtg 1980
gaaagataga gattgttttt agaggttggg tgttgtgttt taggattctg tccattttct 2040
tgtaaaggga taaacacgga cgtgtgcgaa atatgtttgt aaagtgtttt gccattgttg 2100
aaagcgtatt taatgataga atactatcga gccaacatgt actgacatgg aaagatgtca 2160
gagatatgtt aagtgtaaaa tgcaagtggc gggacactat gtatagtctg agccagatca 2220
aagtatgtat gttgttaata tgcatagaac gagagatttg gaaagatata caccaaactg 2280
ttaaatgtgg tttctcttcg gggagggggg gattggggga ggggccccag aggggtttta 2340
gaggggcctt ttcacttttc acttttttca ttttgttctg ttcggatttt ttataagtat 2400
gtagaccccg aagggtttta tgggaactaa catcagtaac ctaacccccg tgactatcct 2460
gtgctcttcc tagggagctg tgttgtttcc caccaccac ccttccctct gaacaaatgc 2520
ctgagtgtcg gggcactttt 2540

```

<210> 4  
<211> 497  
<212> PRT  
<213> Homo sapiens

```

<400> 4
Met Thr Phe Asn Ser Phe Glu Gly Ser Lys Thr Cys Val Pro Ala Asp
 1          5          10          15
Ile Asn Lys Glu Glu Glu Phe Val Glu Glu Phe Asn Arg Leu Lys Thr
      20          25          30
Phe Ala Asn Phe Pro Ser Gly Ser Pro Val Ser Ala Ser Thr Leu Ala
      35          40          45
Arg Ala Gly Phe Leu Tyr Thr Gly Glu Gly Asp Thr Val Arg Cys Phe
      50          55          60
Ser Cys His Ala Ala Val Asp Arg Trp Gln Tyr Gly Asp Ser Ala Val
      65          70          75          80
Gly Arg His Arg Lys Val Ser Pro Asn Cys Arg Phe Ile Asn Gly Phe
      85          90          95
Tyr Leu Glu Asn Ser Ala Thr Gln Ser Thr Asn Ser Gly Ile Gln Asn
      100         105         110
Gly Gln Tyr Lys Val Glu Asn Tyr Leu Gly Ser Arg Asp His Phe Ala
      115         120         125
Leu Asp Arg Pro Ser Glu Thr His Ala Asp Tyr Leu Leu Arg Thr Gly
      130         135         140
Gln Val Val Asp Ile Ser Asp Thr Ile Tyr Pro Arg Asn Pro Ala Met
      145         150         155         160
Tyr Cys Glu Glu Ala Arg Leu Lys Ser Phe Gln Asn Trp Pro Asp Tyr
      165         170         175
Ala His Leu Thr Pro Arg Glu Leu Ala Ser Ala Gly Leu Tyr Tyr Thr
      180         185         190
Gly Ile Gly Asp Gln Val Gln Cys Phe Cys Cys Gly Gly Lys Leu Lys
      195         200         205
Asn Trp Glu Pro Cys Asp Arg Ala Trp Ser Glu His Arg Arg His Phe
      210         215         220

```

Pro	Asn	Cys	Phe	Phe	Val	Leu	Gly	Arg	Asn	Leu	Asn	Ile	Arg	Ser	Glu
225					230					235					240
Ser	Asp	Ala	Val	Ser	Ser	Asp	Arg	Asn	Phe	Pro	Asn	Ser	Thr	Asn	Leu
			245						250					255	
Pro	Arg	Asn	Pro	Ser	Met	Ala	Asp	Tyr	Glu	Ala	Arg	Ile	Phe	Thr	Phe
			260					265					270		
Gly	Thr	Trp	Ile	Tyr	Ser	Val	Asn	Lys	Glu	Gln	Leu	Ala	Arg	Ala	Gly
		275					280					285			
Phe	Tyr	Ala	Leu	Gly	Glu	Gly	Asp	Lys	Val	Lys	Cys	Phe	His	Cys	Gly
	290					295					300				
Gly	Gly	Leu	Thr	Asp	Trp	Lys	Pro	Ser	Glu	Asp	Pro	Trp	Glu	Gln	His
305					310					315					320
Ala	Lys	Trp	Tyr	Pro	Gly	Cys	Lys	Tyr	Leu	Leu	Glu	Gln	Lys	Gly	Gln
				325					330					335	
Glu	Tyr	Ile	Asn	Asn	Ile	His	Leu	Thr	His	Ser	Leu	Glu	Glu	Cys	Leu
			340					345					350		
Val	Arg	Thr	Thr	Glu	Lys	Thr	Pro	Ser	Leu	Thr	Arg	Arg	Ile	Asp	Asp
		355					360					365			
Thr	Ile	Phe	Gln	Asn	Pro	Met	Val	Gln	Glu	Ala	Ile	Arg	Met	Gly	Phe
	370					375					380				
Ser	Phe	Lys	Asp	Ile	Lys	Lys	Ile	Met	Glu	Glu	Lys	Ile	Gln	Ile	Ser
385					390					395					400
Gly	Ser	Asn	Tyr	Lys	Ser	Leu	Glu	Val	Leu	Val	Ala	Asp	Leu	Val	Asn
				405					410					415	
Ala	Gln	Lys	Asp	Ser	Met	Gln	Asp	Glu	Ser	Ser	Gln	Thr	Ser	Leu	Gln
			420					425					430		
Lys	Glu	Ile	Ser	Thr	Glu	Glu	Gln	Leu	Arg	Arg	Leu	Gln	Glu	Glu	Lys
		435					440					445			
Leu	Cys	Lys	Ile	Cys	Met	Asp	Arg	Asn	Ile	Ala	Ile	Val	Phe	Val	Pro
	450					455					460				
Cys	Gly	His	Leu	Val	Thr	Cys	Lys	Gln	Cys	Ala	Glu	Ala	Val	Asp	Lys
465					470					475					480
Cys	Pro	Met	Cys	Tyr	Thr	Val	Ile	Thr	Phe	Lys	Gln	Lys	Ile	Phe	Met
				485					490					495	

Ser

<210> 5  
 <211> 2676  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> variation  
 <222> (1)...(2676)  
 <223> n=A, T, C, or G.

<400> 5  
 tccttgagat gtatcagtat aggatttagg atctccatgt tggaactcta aatgcataga 60  
 aatggaaata atggaaattt ttcatttttg cttttcagcc tagtattaaa actgataaaa 120  
 gcaaagccat gcacaaaact acctccctag agaaaggcta gtcccttttc ttccccattc 180  
 atttcattat gaacatagta gaaaacagca tattcttatc aaatttgatg aaaagcgcca 240  
 acacgtttga actgaaatac gacttgatcat gtgaactgta ccgaatgtct acgtattcca 300  
 cttttcctgc tgggggttcc gtctcagaaa ggagtcttgc tcgtgctggg ttctattaca 360  
 ctggtgtgaa tgacaaggct aaatgcttct gttgtggcct gatgctggat aactggaaaa 420  
 gaggagacag tcctactgaa aagcataaaa agttgtatcc tagctgcaga ttcgttcaga 480  
 gtctaaattc cgtaacaac ttggaagcta cctctcagcc tacttttcct tcttcagtaa 540  
 cacattccac aactcatta cttccgggta cagaaaacag tggatatttc cgtggctctt 600

```

attcaaactc tccatcaaact cctgtaaact ccagagcaaa tcaagaatTT tctgccttga 660
tgagaagttc ctacccctgt ccaatgaata acgaaaatgc cagattactt actttttcaga 720
catggccatt gacttttctg tcgccaacag atctggcacg agcaggcttt tactacatag 780
gacctggaga cagagtggct tgctttgcct gtggtggaaa attgagcaat tgggaaccga 840
aggataatgc tatgtcagaa cacctgagac attttcccaa atgcccattt atagaaaatc 900
agcttcaaga cacttcaaga tacacagttt ctaatctgag catgcagaca catgcagccc 960
gctttaaaac attctttaac tggccctcta gtgttctagt taatcctgag cagcttgcaa 1020
gtgcgggttt ttattatgtg ggtaacagtg atgatgtcaa atgcttttgc tgtgatgggtg 1080
gactcagggtg ttgggaatct ggagatgac catgggttca acatgccaaag tggtttccaa 1140
gggtgtgagta cttgataaga attaaaggac aggagttcat ccgtcaagtt caagccagtt 1200
accctcatct acttgaacag ctgctatcca catcagacag cccaggagat gaaaatgcag 1260
agtcatcaat tatccatttg gaacctggag aagaccattc agaagatgca atcatgatga 1320
atactcctgt gattaatgct gccgtggaaa tgggctttag tagaagcctg gtaaaacaga 1380
cagttcagag aaaaatccta gcaactggag agaattatag actagtcaat gatcttgtgt 1440
tagacttact caatgcagaa gatgaaataa gggaagagga gagagaaaga gcaactgagg 1500
aaaaagaatc aatgatttta ttattaatcc ggaagaatag aatggcactt tttcaacatt 1560
tgacttgtgt aattccaatc ctggatagtc tactaactgc cggaattatt aatgaacaag 1620
aacatgatgt tattaacacag aagacacaga cgtctttaca agcaagagaa ctgattgata 1680
cgattttagt aaaaggaaat attgcagcca ctgtattcag aaactctctg caagaagctg 1740
aagctgtgtt atatgagcat ttatttgtgc aacaggacat aaaatatatt cccacagaag 1800
atgtttcaga tctaccagtg gaagaacaat tgccggagact accagaagaa agaacatgta 1860
aagtgtgtat ggacaaagaa gtgtccatag tgtttattcc ttgtgggtcat ctagtagtat 1920
gcaaagattg tgctccttct ttaagaaagt gtctattttg taggagtaca atcaagggta 1980
cagttcgtac atttctttca tgaagaagaa ccaaaacatc gtctaaactt tagaattaat 2040
ttattaaatg tattataact ttaactttta tcttaatttg gtttccttaa aatttttatt 2100
tatttacaac tcaaaaaaca ttgttttgtg taacatattt atatatgtat ctaaaccata 2160
tgaacatata ttttttagaa actaagagaa tgataggctt ttgttcttat gaacgaaaaa 2220
gaggtagcac tacaacaca atattcaatc caaatttcag cattattgaa attgtaagtg 2280
aagtaaaact taagatattt gagttaacct ttaagaattt taaatatttt ggcattgtac 2340
taataccggg aacatgaagc caggtgtggt ggtatgtacc tgtagtccca ggctgaggca 2400
agagaattac ttgagcccag gagtttgaat ccacctctggg cagcactactg agaccctgcc 2460
tttaaaaaacn aacagnacca aanccaaaca ccagggacac atttctctgt cttttttgat 2520
cagtgtccta tacatcgaag gtgtgcata atgttgaatc acatttttagg gacatgggtg 2580
ttttataaag aattctgtga gnaaaaattt aataaagcaa ccaattact cttaaaaaaa 2640
aaaaaaaaaa aaaaaactcg aggggcccgt accaat 2676

```

<210> 6  
<211> 604  
<212> PRT  
<213> Homo sapiens

```

<400> 6
Met Asn Ile Val Glu Asn Ser Ile Phe Leu Ser Asn Leu Met Lys Ser
1 5 10 15
Ala Asn Thr Phe Glu Leu Lys Tyr Asp Leu Ser Cys Glu Leu Tyr Arg
20 25 30
Met Ser Thr Tyr Ser Thr Phe Pro Ala Gly Val Pro Val Ser Glu Arg
35 40 45
Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Val Asn Asp Lys Val
50 55 60
Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp Lys Arg Gly Asp
65 70 75 80
Ser Pro Thr Glu Lys His Lys Lys Leu Tyr Pro Ser Cys Arg Phe Val
85 90 95
Gln Ser Leu Asn Ser Val Asn Asn Leu Glu Ala Thr Ser Gln Pro Thr
100 105 110
Phe Pro Ser Ser Val Thr His Ser Thr His Ser Leu Leu Pro Gly Thr
115 120 125
Glu Asn Ser Gly Tyr Phe Arg Gly Ser Tyr Ser Asn Ser Pro Ser Asn

```

130						135						140				
Pro	Val	Asn	Ser	Arg	Ala	Asn	Gln	Glu	Phe	Ser	Ala	Leu	Met	Arg	Ser	
145					150					155					160	
Ser	Tyr	Pro	Cys	Pro	Met	Asn	Asn	Glu	Asn	Ala	Arg	Leu	Leu	Thr	Phe	
				165					170					175		
<del>Gln</del>	<del>Thr</del>	<del>Trp</del>	<del>Pro</del>	<del>Leu</del>	<del>Thr</del>	<del>Phe</del>	<del>Leu</del>	<del>Ser</del>	<del>Pro</del>	<del>Thr</del>	<del>Asp</del>	<del>Leu</del>	<del>Ala</del>	<del>Arg</del>	<del>Ala</del>	
			180					185				190				
Gly	Phe	Tyr	Tyr	Ile	Gly	Pro	Gly	Asp	Arg	Val	Ala	Cys	Phe	Ala	Cys	
	195						200					205				
Gly	Gly	Lys	Leu	Ser	Asn	Trp	Glu	Pro	Lys	Asp	Asn	Ala	Met	Ser	Glu	
	210					215				220						
His	Leu	Arg	His	Phe	Pro	Lys	Cys	Pro	Phe	Ile	Glu	Asn	Gln	Leu	Gln	
225					230					235					240	
Asp	Thr	Ser	Arg	Tyr	Thr	Val	Ser	Asn	Leu	Ser	Met	Gln	Thr	His	Ala	
			245						250					255		
Ala	Arg	Phe	Lys	Thr	Phe	Phe	Asn	Trp	Pro	Ser	Ser	Val	Leu	Val	Asn	
		260						265				270				
Pro	Glu	Gln	Leu	Ala	Ser	Ala	Gly	Phe	Tyr	Tyr	Val	Gly	Asn	Ser	Asp	
	275						280					285				
Asp	Val	Lys	Cys	Phe	Cys	Cys	Asp	Gly	Gly	Leu	Arg	Cys	Trp	Glu	Ser	
	290					295					300					
Gly	Asp	Asp	Pro	Trp	Val	Gln	His	Ala	Lys	Trp	Phe	Pro	Arg	Cys	Glu	
305				310					315						320	
Tyr	Leu	Ile	Arg	Ile	Lys	Gly	Gln	Glu	Phe	Ile	Arg	Gln	Val	Gln	Ala	
			325						330					335		
Ser	Tyr	Pro	His	Leu	Leu	Glu	Gln	Leu	Leu	Ser	Thr	Ser	Asp	Ser	Pro	
	340							345					350			
Gly	Asp	Glu	Asn	Ala	Glu	Ser	Ser	Ile	Ile	His	Leu	Glu	Pro	Gly	Glu	
	355					360					365					
Asp	His	Ser	Glu	Asp	Ala	Ile	Met	Met	Asn	Thr	Pro	Val	Ile	Asn	Ala	
	370					375					380					
Ala	Val	Glu	Met	Gly	Phe	Ser	Arg	Ser	Leu	Val	Lys	Gln	Thr	Val	Gln	
385				390					395						400	
Arg	Lys	Ile	Leu	Ala	Thr	Gly	Glu	Asn	Tyr	Arg	Leu	Val	Asn	Asp	Leu	
			405						410					415		
Val	Leu	Asp	Leu	Leu	Asn	Ala	Glu	Asp	Glu	Ile	Arg	Glu	Glu	Glu	Arg	
	420							425				430				
Glu	Arg	Ala	Thr	Glu	Glu	Lys	Glu	Ser	Asn	Asp	Leu	Leu	Leu	Ile	Arg	
	435						440				445					
Lys	Asn	Arg	Met	Ala	Leu	Phe	Gln	His	Leu	Thr	Cys	Val	Ile	Pro	Ile	
	450					455				460						
Leu	Asp	Ser	Leu	Leu	Thr	Ala	Gly	Ile	Ile	Asn	Glu	Gln	Glu	His	Asp	
465					470					475					480	
Val	Ile	Lys	Gln	Lys	Thr	Gln	Thr	Ser	Leu	Gln	Ala	Arg	Glu	Leu	Ile	
			485						490					495		
Asp	Thr	Ile	Leu	Val	Lys	Gly	Asn	Ile	Ala	Ala	Thr	Val	Phe	Arg	Asn	
	500						505					510				
Ser	Leu	Gln	Glu	Ala	Glu	Ala	Val	Leu	Tyr	Glu	His	Leu	Phe	Val	Gln	
	515					520						525				
Gln	Asp	Ile	Lys	Tyr	Ile	Pro	Thr	Glu	Asp	Val	Ser	Asp	Leu	Pro	Val	
	530					535					540					
Glu	Glu	Gln	Leu	Arg	Arg	Leu	Pro	Glu	Glu	Arg	Thr	Cys	Lys	Val	Cys	
545				550						555					560	
Met	Asp	Lys	Glu	Val	Ser	Ile	Val	Phe	Ile	Pro	Cys	Gly	His	Leu	Val	
			565						570					575		
Val	Cys	Lys	Asp	Cys	Ala	Pro	Ser	Leu	Arg	Lys	Cys	Pro	Ile	Cys	Arg	
	580						585						590			
Ser	Thr	Ile	Lys	Gly	Thr	Val	Arg	Thr	Phe	Leu	Ser					
	595						600									

<210> 7  
<211> 2580  
<212> DNA  
<213> Homo sapiens

<220>  
<221> variation  
<222> (1)...(2580)  
<223> n=A, T, C or G.

<400> 7  
ttaggttacc tgaaagagtt actacaaccc caaagagttg tgttctaagt agtatcttgg 60  
taatttcagag agatactcat cctacctgaa tataaactga gataaatcca gtaaagaaag 120  
tgtagtaaat tctacataag agtctatcat tgatttcttt ttgtggtgga aatcttagtt 180  
catgtgaaga aatttcatgt gaatgtttta gctatcaaac agtactgtca cctactcatg 240  
cacaaaactg cctcccaaag acttttccca ggtccctcgt atcaaaacat taagagtata 300  
atggaagata gcacgatctt gtcagattgg acaaacagca acaaacaaaa aatgaagtat 360  
gacttttctt gtgaactcta cagaatgtct acatattcaa ctttccccgc cggggtgcct 420  
gtctcagaaa ggagtcttgc tcgtgctggt ttttattata ctggtgtgaa tgacaaggtc 480  
aaatgcttct gttgtggcct gatgctggat aactggaaac taggagacag tcctattcaa 540  
aagcataaac agctatatcc tagctgtagc tttattcaga atctgggttc agctagtctg 600  
ggatccacct ctaagaatac gtctccaatg agaaacagtt ttgcacattc attatctccc 660  
accttggaa atagtagctt gttcagtggg tcttactcca gccttctctc aaacctctct 720  
aattctagag cagttgaaga catctcttca tcgaggacta accctacag ttatgcaatg 780  
agtactgaag aagccagatt tcttacctac catatgtggc cattaacttt tttgtcacca 840  
tcagaattgg caagagctgg tttttattat ataggacctg gagatagggg agcctgcttt 900  
gcctgtgggt ggaagctcag taactgggaa ccaaaggatg atgctatgtc agaacaccgg 960  
agggattttt ccaactgtcc atttttggaa aattctctag aaactctgag gtttagcatt 1020  
tcaaacttga gcatgcagac acatgcagct cgaatgagaa catttatgta ctggccatct 1080  
agtgttccag ttcagcctga gcagcttgca agtgctgggt tttattatgt gggctcgcaat 1140  
gatgatgtca aatgctttgg ttgtgatggg ggcttgaggt gttgggaatc tggagatgat 1200  
ccatgggtag aacatgccaa gtgggttcca aggtgtgagt tcttgatacg aatgaaaggc 1260  
caagagtttg ttgatgagat tcaaggtaga tatcctcatc ttcttgaaca gctgttgatc 1320  
acttcagata ccactggaga agaaaatgct gacccaccaaa ttattcattt tggacctgga 1380  
gaaagtctct cagaagatgc tgtcatgatg aatacacctg tggttaaatc tgccttggaa 1440  
atgggcttta atagagacct ggtgaaacaa acagttctaa gtaaaatcct gacaactgga 1500  
gagaactata aaacagttaa tgatattgtg tcagcacttc ttaatgctga agatgaaaaa 1560  
agagaagagg agaaggaaaa acaagctgaa gaaatggcat cagatgattt gtcattaatt 1620  
cggaagaaca gaatggctct ctttcaacaa ttgacatgtg tgcttctctat cctggataat 1680  
cttttaaagg ccaatgtaat taataaacag gaacatgata ttattaaaca aaaaacacag 1740  
atacctttac aagcgagaga actgattgat accatttggg ttaaaggaaa tgctgcggcc 1800  
aacatcttca aaaactgtct aaaagaaatt gactctacat tgtataagaa cttatttgtg 1860  
gataagaata tgaagtatat tccaacagaa gatgtttcag gtctgtcact ggaagaacaa 1920  
ttgaggaggt tgcaagaaga acgaacttgt aaagtgtgta tggacaaaga agtttctgtt 1980  
gtatttatct cttgtggtca tctggtagta tgccaggaaat gtgccccttc tctaagaaaa 2040  
tgccctatct gcaggggtat aatcaagggt actgttcgta catttctctc ttaaagaaaa 2100  
atagtctata ttttaacctg cataaaaagg tctttaaatt attgttgaa acttgaagcc 2160  
atctaaagta aaaagggaat tatgagtttt tcaattagta acattcatgt tctagtctgc 2220  
tttggacta ataactttgt ttctgaaaag atggtatcat atatttaatc ttaatctgtt 2280  
tatttacaag ggaagattta tgtttggtga actatattag tatgtatgtg tacctaaggg 2340  
agtagcgten ctgcttggtt tgcattcatt caggagttac tggatttgtt gttctttcag 2400  
aaagctttga anactaaatt atagtgtaga aaagaactgg aaaccaggaa ctctggagtt 2460  
catcagagtt atggtgccga attgtctttg gtgcttttca cttgtgtttt aaaataagga 2520  
ttttctctct atttctcccc ctagtttgtg agaaacatct caataaagtg ctttaaaaaa 2580

<210> 8  
<211> 618

<212> PRT  
 <213> Homo sapiens

<400> 8

Met	His	Lys	Thr	Ala	Ser	Gln	Arg	Leu	Phe	Pro	Gly	Pro	Ser	Tyr	Gln
1				5					10					15	
Asn	Ile	Lys	Ser	Ile	Met	Glu	Asp	Ser	Thr	Ile	Leu	Ser	Asp	Trp	Thr
			20					25					30		
Asn	Ser	Asn	Lys	Gln	Lys	Met	Lys	Tyr	Asp	Phe	Ser	Cys	Glu	Leu	Tyr
		35					40					45			
Arg	Met	Ser	Thr	Tyr	Ser	Thr	Phe	Pro	Ala	Gly	Val	Pro	Val	Ser	Glu
	50					55					60				
Arg	Ser	Leu	Ala	Arg	Ala	Gly	Phe	Tyr	Tyr	Thr	Gly	Val	Asn	Asp	Lys
65					70					75					80
Val	Lys	Cys	Phe	Cys	Cys	Gly	Leu	Met	Leu	Asp	Asn	Trp	Lys	Leu	Gly
			85						90					95	
Asp	Ser	Pro	Ile	Gln	Lys	His	Lys	Gln	Leu	Tyr	Pro	Ser	Cys	Ser	Phe
			100					105					110		
Ile	Gln	Asn	Leu	Val	Ser	Ala	Ser	Leu	Gly	Ser	Thr	Ser	Lys	Asn	Thr
		115					120						125		
Ser	Pro	Met	Arg	Asn	Ser	Phe	Ala	His	Ser	Leu	Ser	Pro	Thr	Leu	Glu
		130				135						140			
His	Ser	Ser	Leu	Phe	Ser	Gly	Ser	Tyr	Ser	Ser	Leu	Pro	Pro	Asn	Pro
145					150					155					160
Leu	Asn	Ser	Arg	Ala	Val	Glu	Asp	Ile	Ser	Ser	Ser	Arg	Thr	Asn	Pro
				165					170					175	
Tyr	Ser	Tyr	Ala	Met	Ser	Thr	Glu	Glu	Ala	Arg	Phe	Leu	Thr	Tyr	His
			180					185					190		
Met	Trp	Pro	Leu	Thr	Phe	Leu	Ser	Pro	Ser	Glu	Leu	Ala	Arg	Ala	Gly
		195					200					205			
Phe	Tyr	Tyr	Ile	Gly	Pro	Gly	Asp	Arg	Val	Ala	Cys	Phe	Ala	Cys	Gly
	210					215					220				
Gly	Lys	Leu	Ser	Asn	Trp	Glu	Pro	Lys	Asp	Asp	Ala	Met	Ser	Glu	His
225					230					235					240
Arg	Arg	His	Phe	Pro	Asn	Cys	Pro	Phe	Leu	Glu	Asn	Ser	Leu	Glu	Thr
				245					250					255	
Leu	Arg	Phe	Ser	Ile	Ser	Asn	Leu	Ser	Met	Gln	Thr	His	Ala	Ala	Arg
			260					265					270		
Met	Arg	Thr	Phe	Met	Tyr	Trp	Pro	Ser	Ser	Val	Pro	Val	Gln	Pro	Glu
		275					280					285			
Gln	Leu	Ala	Ser	Ala	Gly	Phe	Tyr	Tyr	Val	Gly	Arg	Asn	Asp	Asp	Val
	290					295					300				
Lys	Cys	Phe	Gly	Cys	Asp	Gly	Gly	Leu	Arg	Cys	Trp	Glu	Ser	Gly	Asp
305					310					315					320
Asp	Pro	Trp	Val	Glu	His	Ala	Lys	Trp	Phe	Pro	Arg	Cys	Glu	Phe	Leu
				325					330					335	
Ile	Arg	Met	Lys	Gly	Gln	Glu	Phe	Val	Asp	Glu	Ile	Gln	Gly	Arg	Tyr
			340					345					350		
Pro	His	Leu	Leu	Glu	Gln	Leu	Leu	Ser	Thr	Ser	Asp	Thr	Thr	Gly	Glu
		355					360					365			
Glu	Asn	Ala	Asp	Pro	Pro	Ile	Ile	His	Phe	Gly	Pro	Gly	Glu	Ser	Ser
	370					375					380				
Ser	Glu	Asp	Ala	Val	Met	Asn	Thr	Pro	Val	Val	Lys	Ser	Ala	Leu	
385					390					395					400
Glu	Met	Gly	Phe	Asn	Arg	Asp	Leu	Val	Lys	Gln	Thr	Val	Leu	Ser	Lys
				405					410					415	
Ile	Leu	Thr	Thr	Gly	Glu	Asn	Tyr	Lys	Thr	Val	Asn	Asp	Ile	Val	Ser
			420					425					430		
Ala	Leu	Leu	Asn	Ala	Glu	Asp	Glu	Lys	Arg	Glu	Glu	Glu	Lys	Glu	Lys

	435		440		445	
Gln	Ala	Glu	Glu	Met	Ala	Ser
450					455	
Arg	Met	Ala	Leu	Phe	Gln	Leu
465				470		475
<del>Asn</del>	<del>Leu</del>	<del>Leu</del>	<del>Lys</del>	<del>Ala</del>	<del>Asn</del>	<del>Val</del>
			485		490	
Lys	Gln	Lys	Thr	Gln	Ile	Pro
			500		505	
Ile	Trp	Val	Lys	Gly	Asn	Ala
		515			520	
Lys	Glu	Ile	Asp	Ser	Thr	Leu
	530				535	
Met	Lys	Tyr	Ile	Pro	Thr	Glu
545				550		555
Gln	Leu	Arg	Arg	Leu	Gln	Glu
			565		570	
Lys	Glu	Val	Ser	Val	Val	Phe
		580			585	
Gln	Glu	Cys	Ala	Pro	Ser	Leu
		595			600	
Ile	Lys	Gly	Thr	Val	Arg	Thr
	610				615	

<210> 9  
 <211> 2100  
 <212> DNA  
 <213> Mus musculus

<400> 9  
 gacactctgc tgggcgggcg ggcgcctcc tccgggacct cccctcgga accgtcgccc 60  
 gcggcgctta gttaggactg gactgcttgg cgcgaaaagg tggacaagtc ctattttcca 120  
 gagaagatga cttttaacag ttttgaagga actagaactt ttgtacttgc agacaccaat 180  
 aaggatgaag aatttgtaga agagttaaat agattaaaaa catttgctaa cttcccaagt 240  
 agtagtcctg tttcagcatc aacattggcg cgagctgggt ttctttatac cgggtgaagga 300  
 gacaccgtgc aatgtttcag ttgtcatgcg gcaatagata gatggcagta tggagactca 360  
 gctgttggaa gacacaggag aatatcccca aattgcagat ttatcaatgg tttttatttt 420  
 gaaaatgggtg ctgcacagtc taaaaatcct ggtatccaaa atggccagta caaatctgaa 480  
 aactgtgtgg gaaatagaaa tctttttgcc cctgacaggc cacctgagac tcatgctgat 540  
 tatctcttga gaactggaca ggtttagat atttcagaca ccatataccc gaggaaccct 600  
 gccatgtgta gtgaagaagc cagattgaag tcatttcaga actggccgga ctatgctcat 660  
 ttaaccccca gagagttagc tagtgctggc ctctactaca caggggctga tgatcaagtg 720  
 caatgctttt gttgtggggg aaaactgaaa aattgggaac cctgtgatcg tgcttggtca 780  
 gaacacagga gacactttcc caattgcttt tttgttttgg gccggaacgt taatgttcga 840  
 agtgaatctg gtgtgagttc tgataggaat ttcccaaatt caacaaactc tccaagaaat 900  
 ccagccatgg cagaatatga agcacggatc gttacttttg gaacatggat atactcagtt 960  
 aacaaggagc agcttgcaag agctggattt tatgcttttag gtgaaggcga taaagtgaag 1020  
 tgcttccact gtggaggagg gctcacggat tgggaagccaa gtgaagaccc ctgggaccag 1080  
 catgctaagt gctaccagag gtgcaaatac ctattggatg agaaggggca agaatatata 1140  
 aataatatcc atttaaccca tccacttgag gaatcttttg gaagaactgc tgaaaaaaca 1200  
 ccaccgctaa ctaaaaaaat cgatgatacc atcttccaga atcctatggg gcaagaagct 1260  
 atacgaatgg gatttagctt caaggacctt aagaaaacaa tggagaagaaa aatccaaaca 1320  
 tccgggagca gctatctatc acttgaggtc ctattgagag atcttgtgag tgctcagaaa 1380  
 gataatacgg aggatgagtc aagtcacact tcattgcaga aagacattag tactgaagag 1440  
 cagctaaggc gcctacaaga ggagaagctt tccaaaatct gtatggatag aaatattgct 1500  
 atcggttttt ttccttgttg acatctggcc acttgtaaag agtgtgcaga agcagttgac 1560  
 aaatgtccca tgtgctacac cgtcattacg ttcaacccaa aaatttttat gtcttagtgg 1620  
 ggcaccacat gttatgttct tcttgctcta attgaatgtg taatgggagc gaactttaag 1680

```

taatcctgca tttgcattcc attagcatcc tgctgtttcc aaatggagac caatgctaac 1740
agcactgttt ccgctctaaac attcaatttc tggatctttc gagttatcag ctgtatcatt 1800
tagccagtgt tttactcgat tgaaacctta gacagagaag cattttatag cttttcacat 1860
gtatattggt agtacctga cttgatttct atatgtaagt gaattcatca cctgcatggt 1920
tcatgccttt tgcataagct taacaaatgg agtgttctgt ataagcatgg agatgtgatg 1980
gaatctgccc aatgacttta attggcttat tgtaaacacg gaaagaactg ccccacgctg 2040
ctgggaggat aaagattgtt ttagatgctc acttctgtgt tttaggattc tgcccattta 2100

```

<210> 10  
 <211> 496  
 <212> PRT  
 <213> Homo sapiens

<400> 10

Met	Thr	Phe	Asn	Ser	Phe	Glu	Gly	Thr	Arg	Thr	Phe	Val	Leu	Ala	Asp
1				5					10					15	
Thr	Asn	Lys	Asp	Glu	Glu	Phe	Val	Glu	Glu	Phe	Asn	Arg	Leu	Lys	Thr
			20					25					30		
Phe	Ala	Asn	Phe	Pro	Ser	Ser	Ser	Pro	Val	Ser	Ala	Ser	Thr	Leu	Ala
		35					40					45			
Arg	Ala	Gly	Phe	Leu	Tyr	Thr	Gly	Glu	Gly	Asp	Thr	Val	Gln	Cys	Phe
	50					55					60				
Ser	Cys	His	Ala	Ala	Ile	Asp	Arg	Trp	Gln	Tyr	Gly	Asp	Ser	Ala	Val
65					70				75						80
Gly	Arg	His	Arg	Arg	Ile	Ser	Pro	Asn	Cys	Arg	Phe	Ile	Asn	Gly	Phe
			85					90						95	
Tyr	Phe	Glu	Asn	Gly	Ala	Ala	Gln	Ser	Thr	Asn	Pro	Gly	Ile	Gln	Asn
			100					105					110		
Gly	Gln	Tyr	Lys	Ser	Glu	Asn	Cys	Val	Gly	Asn	Arg	Asn	Pro	Phe	Ala
		115				120						125			
Pro	Asp	Arg	Pro	Pro	Glu	Thr	His	Ala	Asp	Tyr	Leu	Leu	Arg	Thr	Gly
	130					135					140				
Gln	Val	Val	Asp	Ile	Ser	Asp	Thr	Ile	Tyr	Pro	Arg	Asn	Pro	Ala	Met
145					150				155						160
Cys	Ser	Glu	Glu	Ala	Arg	Leu	Lys	Ser	Phe	Gln	Asn	Trp	Pro	Asp	Tyr
				165					170					175	
Ala	His	Leu	Thr	Pro	Arg	Glu	Leu	Ala	Ser	Ala	Gly	Leu	Tyr	Tyr	Thr
		180						185					190		
Gly	Ala	Asp	Asp	Gln	Val	Gln	Cys	Phe	Cys	Cys	Gly	Gly	Lys	Leu	Lys
		195				200						205			
Asn	Trp	Glu	Pro	Cys	Asp	Arg	Ala	Trp	Ser	Glu	His	Arg	Arg	His	Phe
	210					215					220				
Pro	Asn	Cys	Phe	Phe	Val	Leu	Gly	Arg	Asn	Val	Asn	Val	Arg	Ser	Glu
225					230				235						240
Ser	Gly	Val	Ser	Ser	Asp	Arg	Asn	Phe	Pro	Asn	Ser	Thr	Asn	Ser	Pro
				245					250					255	
Arg	Asn	Pro	Ala	Met	Ala	Glu	Tyr	Glu	Ala	Arg	Ile	Val	Thr	Phe	Gly
		260						265					270		
Thr	Trp	Ile	Tyr	Ser	Val	Asn	Lys	Glu	Gln	Leu	Ala	Arg	Ala	Gly	Phe
		275					280						285		
Tyr	Ala	Leu	Gly	Glu	Gly	Asp	Lys	Val	Lys	Cys	Phe	His	Cys	Gly	Gly
	290					295					300				
Gly	Leu	Thr	Asp	Trp	Lys	Pro	Ser	Glu	Asp	Pro	Trp	Asp	Gln	His	Ala
305					310				315						320
Lys	Cys	Tyr	Pro	Gly	Cys	Lys	Tyr	Leu	Leu	Asp	Glu	Lys	Gly	Gln	Glu
				325					330					335	
Tyr	Ile	Asn	Asn	Ile	His	Leu	Thr	His	Pro	Leu	Glu	Glu	Ser	Leu	Gly
			340					345					350		

Arg	Thr	Ala	Glu	Lys	Thr	Pro	Pro	Leu	Thr	Lys	Lys	Ile	Asp	Asp	Thr
		355					360					365			
Ile	Phe	Gln	Asn	Pro	Met	Val	Gln	Glu	Ala	Ile	Arg	Met	Gly	Phe	Ser
	370					375					380				
Phe	Lys	Asp	Leu	Lys	Lys	Thr	Met	Glu	Glu	Lys	Ile	Gln	Thr	Ser	Gly
385					390					395					400
Ser	Ser	Tyr	Leu	Ser	Leu	Glu	Val	Leu	Ile	Ala	Asp	Leu	Val	Ser	Ala
				405					410					415	
Gln	Lys	Asp	Asn	Thr	Glu	Asp	Glu	Ser	Ser	Gln	Thr	Ser	Leu	Gln	Lys
			420					425					430		
Asp	Ile	Ser	Thr	Glu	Glu	Gln	Leu	Arg	Arg	Leu	Gln	Glu	Glu	Lys	Leu
		435					440					445			
Ser	Lys	Ile	Cys	Met	Asp	Arg	Asn	Ile	Ala	Ile	Val	Phe	Phe	Pro	Cys
	450					455					460				
Gly	His	Leu	Ala	Thr	Cys	Lys	Gln	Cys	Ala	Glu	Ala	Val	Asp	Lys	Cys
465					470					475					480
Pro	Met	Cys	Tyr	Thr	Val	Ile	Thr	Phe	Asn	Gln	Lys	Ile	Phe	Met	Ser
				485					490					495	

<210> 11  
 <211> 67  
 <212> PRT  
 <213> Orgyia pseudotsugata

<400> 11  
 Lys Ala Ala Arg Leu Gly Thr Tyr Thr Asn Trp Pro Val Gln Phe Leu  
 1 5 10 15  
 Glu Pro Ser Arg Met Ala Ala Ser Gly Phe Tyr Tyr Leu Gly Arg Gly  
 20 25 30  
 Asp Glu Val Arg Cys Ala Phe Cys Lys Val Glu Ile Thr Asn Trp Val  
 35 40 45  
 Arg Gly Asp Asp Pro Glu Thr Asp His Lys Arg Trp Ala Pro Gln Cys  
 50 55 60  
 Pro Phe Val  
 65

<210> 12  
 <211> 275  
 <212> PRT  
 <213> Cydia pomonella

<400> 12  
 Met Ser Asp Leu Arg Leu Glu Glu Val Arg Leu Asn Thr Phe Glu Lys  
 1 5 10 15  
 Trp Pro Val Ser Phe Leu Ser Pro Glu Thr Met Ala Lys Asn Gly Phe  
 20 25 30  
 Tyr Tyr Leu Gly Arg Ser Asp Glu Val Arg Cys Ala Phe Cys Lys Val  
 35 40 45  
 Glu Ile Met Arg Trp Lys Glu Gly Glu Asp Pro Ala Ala Asp His Lys  
 50 55 60  
 Lys Trp Ala Pro Gln Cys Pro Phe Val Lys Gly Ile Asp Val Cys Gly  
 65 70 75 80  
 Ser Ile Val Thr Thr Asn Asn Ile Gln Asn Thr Thr Thr His Asp Thr  
 85 90 95  
 Ile Ile Gly Pro Ala His Pro Lys Tyr Ala His Glu Ala Ala Arg Val  
 100 105 110  
 Lys Ser Phe His Asn Trp Pro Arg Cys Met Lys Gln Arg Pro Glu Gln

	115					120					125					
Met	Ala	Asp	Ala	Gly	Phe	Phe	Tyr	Thr	Gly	Tyr	Gly	Asp	Asn	Thr	Lys	
	130					135					140					
Cys	Phe	Tyr	Cys	Asp	Gly	Gly	Leu	Lys	Asp	Trp	Glu	Pro	Glu	Asp	Val	
145					150					155					160	
<del>Pro</del>	<del>Trp</del>	<del>Glu</del>	<del>Gln</del>	<del>His</del>	<del>Val</del>	<del>Arg</del>	<del>Trp</del>	<del>Phe</del>	<del>Asp</del>	<del>Arg</del>	<del>Cys</del>	<del>Ala</del>	<del>Tyr</del>	<del>Val</del>	<del>Gln</del>	
				165					170					175		
Leu	Val	Lys	Gly	Arg	Asp	Tyr	Val	Gln	Lys	Val	Ile	Thr	Glu	Ala	Cys	
			180					185					190			
Val	Leu	Pro	Gly	Glu	Asn	Thr	Thr	Val	Ser	Thr	Ala	Ala	Pro	Val	Ser	
	195					200						205				
Glu	Pro	Ile	Pro	Glu	Thr	Lys	Ile	Glu	Lys	Glu	Pro	Gln	Val	Glu	Asp	
	210					215					220					
Ser	Lys	Leu	Cys	Lys	Ile	Cys	Tyr	Val	Glu	Glu	Cys	Ile	Val	Cys	Phe	
225				230					235						240	
Val	Pro	Cys	Gly	His	Val	Val	Ala	Cys	Ala	Lys	Cys	Ala	Leu	Ser	Val	
			245					250					255			
Asp	Lys	Cys	Pro	Met	Cys	Arg	Lys	Ile	Val	Thr	Ser	Val	Leu	Lys	Val	
			260					265					270			
Tyr	Phe	Ser														
	275															

<210> 13  
 <211> 498  
 <212> PRT  
 <213> Drosophila melanogaster

<400> 13

Met	Thr	Glu	Leu	Gly	Met	Glu	Leu	Glu	Ser	Val	Arg	Leu	Ala	Thr	Phe	
1				5				10						15		
Gly	Glu	Trp	Pro	Leu	Asn	Ala	Pro	Val	Ser	Ala	Glu	Asp	Leu	Val	Ala	
			20					25				30				
Asn	Gly	Phe	Phe	Ala	Thr	Gly	Lys	Trp	Leu	Glu	Ala	Glu	Cys	His	Phe	
	35					40						45				
Cys	His	Val	Arg	Ile	Asp	Arg	Trp	Glu	Tyr	Gly	Asp	Gln	Val	Ala	Glu	
	50					55					60					
Arg	His	Arg	Arg	Ser	Ser	Pro	Ile	Cys	Ser	Met	Val	Leu	Ala	Pro	Asn	
65				70					75						80	
His	Cys	Gly	Asn	Val	Pro	Arg	Ser	Gln	Glu	Ser	Asp	Asn	Glu	Gly	Asn	
			85					90					95			
Ser	Val	Val	Asp	Ser	Pro	Glu	Ser	Cys	Ser	Cys	Pro	Asp	Leu	Leu	Leu	
			100					105				110				
Glu	Ala	Asn	Arg	Leu	Val	Thr	Phe	Lys	Asp	Trp	Pro	Asn	Pro	Asn	Ile	
	115					120						125				
Thr	Pro	Gln	Ala	Leu	Ala	Lys	Ala	Gly	Phe	Tyr	Tyr	Leu	Asn	Arg	Leu	
	130					135					140					
Asp	His	Val	Lys	Cys	Val	Trp	Cys	Asn	Gly	Val	Ile	Ala	Lys	Trp	Glu	
145				150					155						160	
Lys	Asn	Asp	Asn	Ala	Phe	Glu	Glu	His	Lys	Arg	Phe	Phe	Pro	Gln	Cys	
			165					170						175		
Pro	Arg	Val	Gln	Met	Gly	Pro	Leu	Ile	Glu	Phe	Ala	Thr	Gly	Lys	Asn	
			180					185					190			
Leu	Asp	Glu	Leu	Gly	Ile	Gln	Pro	Thr	Thr	Leu	Pro	Leu	Arg	Pro	Lys	
	195					200						205				
Tyr	Ala	Cys	Val	Asp	Ala	Arg	Leu	Arg	Thr	Phe	Thr	Asp	Trp	Pro	Ile	
	210					215					220					
Ser	Asn	Ile	Gln	Pro	Ala	Ser	Ala	Leu	Ala	Gln	Ala	Gly	Leu	Tyr	Tyr	
225					230					235					240	

Gln	Lys	Ile	Gly	Asp	Gln	Val	Arg	Cys	Phe	His	Cys	Asn	Ile	Gly	Leu
				245					250					255	
Arg	Ser	Trp	Gln	Lys	Glu	Asp	Glu	Pro	Trp	Phe	Glu	His	Ala	Lys	Trp
			260					265					270		
Ser	Pro	Lys	Cys	Gln	Phe	Val	Leu	Leu	Ala	Lys	Gly	Pro	Ala	Tyr	Val
		275					280					285			
Ser	Glu	Val	Leu	Ala	Thr	Thr	Ala	Ala	Asn	Ala	Ser	Ser	Gln	Pro	Ala
	290					295					300				
Thr	Ala	Pro	Ala	Pro	Thr	Leu	Gln	Ala	Asp	Val	Leu	Met	Asp	Glu	Ala
305					310				315					320	
Pro	Ala	Lys	Glu	Ala	Leu	Thr	Leu	Gly	Ile	Asp	Gly	Gly	Val	Val	Arg
			325					330						335	
Asn	Ala	Ile	Gln	Arg	Lys	Leu	Leu	Ser	Ser	Gly	Cys	Ala	Phe	Ser	Thr
			340					345					350		
Leu	Asp	Glu	Leu	Leu	His	Asp	Ile	Phe	Asp	Asp	Ala	Gly	Ala	Gly	Ala
	355					360						365			
Ala	Leu	Glu	Val	Arg	Glu	Pro	Pro	Glu	Pro	Ser	Ala	Pro	Phe	Ile	Glu
	370					375					380				
Pro	Cys	Gln	Ala	Thr	Thr	Ser	Lys	Ala	Ala	Ser	Val	Pro	Ile	Pro	Val
385					390					395				400	
Ala	Asp	Ser	Ile	Pro	Ala	Lys	Pro	Gln	Ala	Ala	Glu	Ala	Val	Ser	Asn
			405					410						415	
Ile	Ser	Lys	Ile	Thr	Asp	Glu	Ile	Gln	Lys	Met	Ser	Val	Ser	Thr	Pro
			420					425					430		
Asn	Gly	Asn	Leu	Ser	Leu	Glu	Glu	Glu	Asn	Arg	Gln	Leu	Lys	Asp	Ala
	435					440						445			
Arg	Leu	Cys	Lys	Val	Cys	Leu	Asp	Glu	Glu	Val	Gly	Val	Val	Phe	Leu
	450					455					460				
Pro	Cys	Gly	His	Leu	Ala	Thr	Cys	Asn	Gln	Cys	Ala	Pro	Ser	Val	Ala
465					470					475				480	
Asn	Cys	Pro	Met	Cys	Arg	Ala	Asp	Ile	Lys	Gly	Phe	Val	Arg	Thr	Phe
			485					490						495	

Leu Ser

<210> 14  
 <211> 67  
 <212> PRT  
 <213> Cydia pomonella

<400> 14

Glu	Glu	Val	Arg	Leu	Asn	Thr	Phe	Glu	Lys	Trp	Pro	Val	Ser	Phe	Leu
1				5					10					15	
Ser	Pro	Glu	Thr	Met	Ala	Lys	Asn	Gly	Phe	Tyr	Tyr	Leu	Gly	Arg	Ser
			20					25					30		
Asp	Glu	Val	Arg	Cys	Ala	Phe	Cys	Lys	Val	Glu	Ile	Met	Arg	Trp	Lys
		35				40						45			
Glu	Gly	Glu	Asp	Pro	Ala	Ala	Asp	His	Lys	Lys	Trp	Ala	Pro	Gln	Cys
	50					55					60				
Pro	Phe	Val													
65															

<210> 15  
 <211> 67  
 <212> PRT  
 <213> Homo sapiens

<400> 15  
 Glu Ala Asn Arg Leu Val Thr Phe Lys Asp Trp Pro Asn Pro Asn Ile  
 1 5 10 15  
 Thr Pro Gln Ala Leu Ala Lys Ala Gly Phe Tyr Tyr Leu Asn Arg Leu  
 20 25 30  
 Asp His Val Lys Cys Val Trp Cys Asn Gly Val Ile Ala Lys Trp Glu  
 35 40 45  
 Lys Asn Asp Asn Ala Phe Glu Glu His Lys Arg Phe Phe Pro Gln Cys  
 50 55 60  
 Pro Arg Val  
 65

<210> 16  
 <211> 68  
 <212> PRT  
 <213> Mus musculus

<400> 16  
 Glu Phe Asn Arg Leu Lys Thr Phe Ala Asn Phe Pro Ser Ser Ser Pro  
 1 5 10 15  
 Val Ser Ala Ser Thr Leu Ala Arg Ala Gly Phe Leu Tyr Thr Gly Glu  
 20 25 30  
 Gly Asp Thr Val Gln Cys Phe Ser Cys His Ala Ala Ile Asp Arg Trp  
 35 40 45  
 Gln Tyr Gly Asp Ser Ala Val Gly Arg His Arg Arg Ile Ser Pro Asn  
 50 55 60  
 Cys Arg Phe Ile  
 65

<210> 17  
 <211> 68  
 <212> PRT  
 <213> Homo sapiens

<400> 17  
 Glu Phe Asn Arg Leu Lys Thr Phe Ala Asn Phe Pro Ser Gly Ser Pro  
 1 5 10 15  
 Val Ser Ala Ser Thr Leu Ala Arg Ala Gly Phe Leu Tyr Thr Gly Glu  
 20 25 30  
 Gly Asp Thr Val Arg Cys Phe Ser Cys His Ala Ala Val Asp Arg Trp  
 35 40 45  
 Gln Tyr Gly Asp Ser Ala Val Gly Arg His Arg Lys Val Ser Pro Asn  
 50 55 60  
 Cys Arg Phe Ile  
 65

<210> 18  
 <211> 68  
 <212> PRT  
 <213> Homo sapiens

<400> 18  
 Glu Leu Tyr Arg Met Ser Thr Tyr Ser Thr Phe Pro Ala Gly Val Pro  
 1 5 10 15  
 Val Ser Glu Arg Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Val  
 20 25 30

Asn Asp Lys Val Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp  
           35                  40                  45  
 Lys Arg Gly Asp Ser Pro Thr Glu Lys His Lys Lys Leu Tyr Pro Ser  
           50                  55                  60  
 Cys Arg Phe Val  
 65

---

<210> 19  
 <211> 68  
 <212> PRT  
 <213> Homo sapiens

<400> 19  
 Glu Leu Tyr Arg Met Ser Thr Tyr Ser Thr Phe Pro Ala Gly Val Pro  
   1                  5                  10                  15  
 Val Ser Glu Arg Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Val  
           20                  25                  30  
 Asn Asp Lys Val Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp  
           35                  40                  45  
 Lys Leu Gly Asp Ser Pro Ile Gln Lys His Lys Gln Leu Tyr Pro Ser  
           50                  55                  60  
 Cys Ser Phe Ile  
 65

<210> 20  
 <211> 68  
 <212> PRT  
 <213> Mus musculus

<400> 20  
 Glu Glu Ala Arg Leu Lys Ser Phe Gln Asn Trp Pro Asp Tyr Ala His  
   1                  5                  10                  15  
 Leu Thr Pro Arg Glu Leu Ala Ser Ala Gly Leu Tyr Tyr Thr Gly Ala  
           20                  25                  30  
 Asp Asp Gln Val Gln Cys Phe Cys Cys Gly Gly Lys Leu Lys Asn Trp  
           35                  40                  45  
 Glu Pro Cys Asp Arg Ala Trp Ser Glu His Arg Arg His Phe Pro Asn  
           50                  55                  60  
 Cys Phe Phe Val  
 65

<210> 21  
 <211> 68  
 <212> PRT  
 <213> Homo sapiens

<400> 21  
 Glu Glu Ala Arg Leu Lys Ser Phe Gln Asn Trp Pro Asp Tyr Ala His  
   1                  5                  10                  15  
 Leu Thr Pro Arg Glu Leu Ala Ser Ala Gly Leu Tyr Tyr Thr Gly Ile  
           20                  25                  30  
 Gly Asp Gln Val Gln Cys Phe Cys Cys Gly Gly Lys Leu Lys Asn Trp  
           35                  40                  45  
 Glu Pro Cys Asp Arg Ala Trp Ser Glu His Arg Arg His Phe Pro Asn  
           50                  55                  60  
 Cys Phe Phe Val

65

<210> 22

<211> 67

<212> PRT

<213> Homo sapiens

<400> 22

Glu	Asn	Ala	Arg	Leu	Leu	Thr	Phe	Gln	Thr	Trp	Pro	Leu	Thr	Phe	Leu
1				5					10					15	
Ser	Pro	Thr	Asp	Leu	Ala	Arg	Ala	Gly	Phe	Tyr	Tyr	Ile	Gly	Pro	Gly
			20					25					30		
Asp	Arg	Val	Ala	Cys	Phe	Ala	Cys	Gly	Gly	Lys	Leu	Ser	Asn	Trp	Glu
		35					40					45			
Pro	Lys	Asp	Asn	Ala	Met	Ser	Glu	His	Leu	Arg	His	Phe	Pro	Lys	Cys
	50					55					60				
Pro	Phe	Ile													
65															

<210> 23

<211> 67

<212> PRT

<213> Homo sapiens

<400> 23

Glu	Glu	Ala	Arg	Phe	Leu	Thr	Tyr	His	Met	Trp	Pro	Leu	Thr	Phe	Leu
1				5					10					15	
Ser	Pro	Ser	Glu	Leu	Ala	Arg	Ala	Gly	Phe	Tyr	Tyr	Ile	Gly	Pro	Gly
			20					25					30		
Asp	Arg	Val	Ala	Cys	Phe	Ala	Cys	Gly	Gly	Lys	Leu	Ser	Asn	Trp	Glu
		35					40					45			
Pro	Lys	Asp	Asp	Ala	Met	Ser	Glu	His	Arg	Arg	His	Phe	Pro	Asn	Cys
	50					55					60				
Pro	Phe	Leu													
65															

<210> 24

<211> 66

<212> PRT

<213> Mus musculus

<400> 24

Tyr	Glu	Ala	Arg	Ile	Val	Thr	Phe	Gly	Thr	Trp	Ile	Tyr	Ser	Val	Asn
1				5					10					15	
Lys	Glu	Gln	Leu	Ala	Arg	Ala	Gly	Phe	Tyr	Ala	Leu	Gly	Glu	Gly	Asp
			20					25					30		
Lys	Val	Lys	Cys	Phe	His	Cys	Gly	Gly	Gly	Leu	Thr	Asp	Trp	Lys	Pro
		35					40					45			
Ser	Glu	Asp	Pro	Trp	Asp	Gln	His	Ala	Lys	Cys	Tyr	Pro	Gly	Cys	Lys
	50					55					60				
Tyr	Leu														
65															

<210> 25

<211> 66

<212> PRT  
 <213> Homo sapiens

<400> 25  
 Tyr Glu Ala Arg Ile Phe Thr Phe Gly Thr Trp Ile Tyr Ser Val Asn  
 1 5 10 15  
 Lys Glu Gln Leu Ala Arg Ala Gly Phe Tyr Ala Leu Gly Glu Gly Asp  
 20 25 30  
 Lys Val Lys Cys Phe His Cys Gly Gly Gly Leu Thr Asp Trp Lys Pro  
 35 40 45  
 Ser Glu Asp Pro Trp Glu Gln His Ala Lys Trp Tyr Pro Gly Cys Lys  
 50 55 60  
 Tyr Leu  
 65

<210> 26  
 <211> 68  
 <212> PRT  
 <213> Homo sapiens

<400> 26  
 His Ala Ala Arg Phe Lys Thr Phe Phe Asn Trp Pro Ser Ser Val Leu  
 1 5 10 15  
 Val Asn Pro Glu Gln Leu Ala Ser Ala Gly Phe Tyr Tyr Val Gly Asn  
 20 25 30  
 Ser Asp Asp Val Lys Cys Phe Cys Cys Asp Gly Gly Leu Arg Cys Trp  
 35 40 45  
 Glu Ser Gly Asp Asp Pro Trp Val Gln His Ala Lys Trp Phe Pro Arg  
 50 55 60  
 Cys Glu Tyr Leu  
 65

<210> 27  
 <211> 68  
 <212> PRT  
 <213> Homo sapiens

<400> 27  
 His Ala Ala Arg Met Arg Thr Phe Met Tyr Trp Pro Ser Ser Val Pro  
 1 5 10 15  
 Val Gln Pro Glu Gln Leu Ala Ser Ala Gly Phe Tyr Tyr Val Gly Arg  
 20 25 30  
 Asn Asp Asp Val Lys Cys Phe Gly Cys Asp Gly Gly Leu Arg Cys Trp  
 35 40 45  
 Glu Ser Gly Asp Asp Pro Trp Val Glu His Ala Lys Trp Phe Pro Arg  
 50 55 60  
 Cys Glu Phe Leu  
 65

<210> 28  
 <211> 68  
 <212> PRT  
 <213> Orgyia pseudotsugata

<400> 28  
 Glu Ala Ala Arg Leu Arg Thr Phe Ala Glu Trp Pro Arg Gly Leu Lys

1		5		10		15
Gln	Arg	Pro	Glu	Leu	Ala	Gln
		20		25		30
Gly	Asp	Lys	Thr	Arg	Cys	Phe
		35		40		45
<del>Glu</del>	<del>Pro</del>	<del>Asp</del>	<del>Asp</del>	<del>Ala</del>	<del>Pro</del>	<del>Trp</del>
	50			55		60
Cys	Glu	Tyr	Val			
65						

<210> 29  
 <211> 68  
 <212> PRT  
 <213> Cydia pomonella

<400> 29
Glu Ala Ala Arg Val Lys Ser Phe His Asn Trp Pro Arg Cys Met Lys
1 5 10 15
Gln Arg Pro Glu Gln Met Ala Asp Ala Gly Phe Phe Tyr Thr Gly Tyr
20 25 30
Gly Asp Asn Thr Lys Cys Phe Tyr Cys Asp Gly Gly Leu Lys Asp Trp
35 40 45
Glu Pro Glu Asp Val Pro Trp Glu Gln His Val Arg Trp Phe Asp Arg
50 55 60
Cys Ala Tyr Val
65

<210> 30  
 <211> 68  
 <212> PRT  
 <213> Drosophila melanogaster

<400> 30
Val Asp Ala Arg Leu Arg Thr Phe Thr Asp Trp Pro Ile Ser Asn Ile
1 5 10 15
Gln Pro Ala Ser Ala Leu Ala Gln Ala Gly Leu Tyr Tyr Gln Lys Ile
20 25 30
Gly Asp Gln Val Arg Cys Phe His Cys Asn Ile Gly Leu Arg Ser Trp
35 40 45
Gln Lys Glu Asp Glu Pro Trp Phe Glu His Ala Lys Trp Ser Pro Lys
50 55 60
Cys Gln Phe Val
65

<210> 31  
 <211> 66  
 <212> PRT  
 <213> Drosophila melanogaster

<400> 31
Glu Ser Val Arg Leu Ala Thr Phe Gly Glu Trp Pro Leu Asn Ala Pro
1 5 10 15
Val Ser Ala Glu Asp Leu Val Ala Asn Gly Phe Phe Gly Thr Trp Met
20 25 30
Glu Ala Glu Cys Asp Phe Cys His Val Arg Ile Asp Arg Trp Glu Tyr
35 40 45

Gly Asp Leu Val Ala Glu Arg His Arg Arg Ser Ser Pro Ile Cys Ser  
 50 55 60  
 Met Val  
 65

<210> 32  
 <211> 46  
 <212> PRT  
 <213> Homo sapiens

<400> 32  
 Glu Gln Leu Arg Arg Leu Gln Glu Glu Arg Thr Cys Lys Val Cys Met  
 1 5 10 15  
 Asp Lys Glu Val Ser Val Val Phe Ile Pro Cys Gly His Leu Val Val  
 20 25 30  
 Cys Gln Glu Cys Ala Pro Ser Leu Arg Lys Cys Pro Ile Cys  
 35 40 45

<210> 33  
 <211> 46  
 <212> PRT  
 <213> Homo sapiens

<400> 33  
 Glu Gln Leu Arg Arg Leu Pro Glu Glu Arg Thr Cys Lys Val Cys Met  
 1 5 10 15  
 Asp Lys Glu Val Ser Ile Val Phe Ile Pro Cys Gly His Leu Val Val  
 20 25 30  
 Cys Lys Asp Cys Ala Pro Ser Leu Arg Lys Cys Pro Ile Cys  
 35 40 45

<210> 34  
 <211> 46  
 <212> PRT  
 <213> Homo sapiens

<400> 34  
 Glu Gln Leu Arg Arg Leu Gln Glu Glu Lys Leu Ser Lys Ile Cys Met  
 1 5 10 15  
 Asp Arg Asn Ile Ala Ile Val Phe Phe Pro Cys Gly His Leu Ala Thr  
 20 25 30  
 Cys Lys Gln Cys Ala Glu Ala Val Asp Lys Cys Pro Met Cys  
 35 40 45

<210> 35  
 <211> 46  
 <212> PRT  
 <213> Homo sapiens

<400> 35  
 Glu Gln Leu Arg Arg Leu Gln Glu Glu Lys Leu Cys Lys Ile Cys Met  
 1 5 10 15  
 Asp Arg Asn Ile Ala Ile Val Phe Val Pro Cys Gly His Leu Val Thr  
 20 25 30  
 Cys Lys Gln Cys Ala Glu Ala Val Asp Lys Cys Pro Met Cys

35

40

45

&lt;210&gt; 36

&lt;211&gt; 46

&lt;212&gt; PRT

<213> *Drosophila melanogaster*

&lt;400&gt; 36

Glu	Glu	Asn	Arg	Gln	Leu	Lys	Asp	Ala	Arg	Leu	Cys	Lys	Val	Cys	Leu
1				5					10					15	
Asp	Glu	Glu	Val	Gly	Val	Val	Phe	Leu	Pro	Cys	Gly	His	Leu	Ala	Thr
			20					25					30		
Cys	Asn	Gln	Cys	Ala	Pro	Ser	Val	Ala	Asn	Cys	Pro	Met	Cys		
			35				40					45			

&lt;210&gt; 37

&lt;211&gt; 46

&lt;212&gt; PRT

<213> *Cydia pomonella*

&lt;400&gt; 37

Glu	Lys	Glu	Pro	Gln	Val	Glu	Asp	Ser	Lys	Leu	Cys	Lys	Ile	Cys	Tyr
1				5					10					15	
Val	Glu	Glu	Cys	Ile	Val	Cys	Phe	Val	Pro	Cys	Gly	His	Val	Val	Ala
			20					25					30		
Cys	Ala	Lys	Cys	Ala	Leu	Ser	Val	Asp	Lys	Cys	Pro	Met	Cys		
			35				40					45			

&lt;210&gt; 38

&lt;211&gt; 46

&lt;212&gt; PRT

<213> *Orgyia pseudotsugata*

&lt;400&gt; 38

Ala	Val	Glu	Ala	Glu	Val	Ala	Asp	Asp	Arg	Leu	Cys	Lys	Ile	Cys	Leu
1				5					10					15	
Gly	Ala	Glu	Lys	Thr	Val	Cys	Phe	Val	Pro	Cys	Gly	His	Val	Val	Ala
			20					25					30		
Cys	Gly	Lys	Cys	Ala	Ala	Gly	Val	Thr	Thr	Cys	Pro	Val	Cys		
			35				40					45			

&lt;210&gt; 39

&lt;211&gt; 2474

&lt;212&gt; DNA

<213> *Mus musculus*

&lt;400&gt; 39

gaattccggg	agacctacac	ccccggagat	cagagggtcat	tgctggcggtt	cagagcctag	60
gaagtgggct	gcggtatcag	cctagcagta	aaaccgacca	gaagccatgc	acaaaactac	120
atccccagag	aaagacttgt	cccttcccct	ccctgtcatc	tcaccatgaa	catgggtcaa	180
gacagcgctt	ttctagccaa	gctgatgaag	agtgtgaca	cctttgagtt	gaagtatgac	240
ttttcctgtg	agctgtaccg	attgtccacg	tattcagctt	ttcccagggg	agttcctgtg	300
tcagaaagga	gtctggctcg	tgctggcttt	tactacactg	gtgccaatga	caaggtcaag	360
tgcttctgct	gtggcctgat	gctagacaac	tggaacaag	gggacagtcc	catggagaag	420
cacagaaagt	tgtaccccag	ctgcaacttt	gtacagactt	tgaatccagc	caacagtctg	480

```

gaagctagtc ctcggccttc tcttccttcc acggcgatga gcaccatgcc tttgagcttt 540
gcaagttctg agaatactgg ctatttcagt ggctcttact cgagctttcc ctcagacct 600
gtgaacttcc gagcaaatca agattgtcct gctttgagca caagtcccta ccactttgca 660
atgaacacag agaaggccag attactcacc tatgaaacat ggccattgtc ttttctgtca 720
ccagcaaaagc tggccaaaagc aggcttctac tacataggac ctggagatag agtggcctgc 780
tttgctgtgc atgggaaaact gagcaactgg gaacgtaagg atgatgctat gtcagagcac 840
cagaggcatt tccccagctg tccgttctta aaagacttgg gtcagtctgc ttcgagatac 900
actgtctcta acctgagcat gcagacacac gcagcccgtg ttagaacatt ctctaactgg 960
ccttctagtg cactagttca tccccaggaa cttgcaagtg cgggctttta ttatacagga 1020
cacagtgatg atgtcaagtg tttatgctgt gatgggtggc tgagggtgctg ggaatctgga 1080
gatgacccct ggggtggaaca tgccaagtg tttccaaggt gtgagtactt gctcagaatc 1140
aaaggccaag aatttgtcag ccaagttcaa gctggctatc ctcatctact tgagcagcta 1200
ttatctacgt cagactcccc agaagatgag aatgcagacg cagcaatcgt gcattttggc 1260
cctggagaaa gttcgggaaga tgtcgtcatg atgacacgc ctgtgggttaa agcagccttg 1320
gaaatgggct tcagtaggag cctggtgaga cagacgggtc agtggcagat cctggccact 1380
ggtgagaact acaggaccgt cagtgcctc gttataggct tactcgatgc agaagacgag 1440
atgagagagg agcagatgga gcaggcggc gaggaggagg agtcagatga tctagcacta 1500
atccggaaga acaaaatggg gcttttccaa catttgacgt gtgtgacacc aatgctgtat 1560
tgcctcctaa gtgcaagggc catcactgaa caggagtgc atgctgtgaa acagaaacca 1620
cacaccttac aagcaagcac actgattgat actgtgttag caaaaggaaa cactgcagca 1680
acctattca gaaactccct tcgggaaatt gaccctgcgt tatacagaga tatatttgg 1740
aacacaggaca ttaggagtct tcccacagat gacattgcag ctctaccaat ggaagaacag 1800
ttgcggcccc tcccgaggga cagaatgtgt aaagtgtgta tggaccgaga ggtatccatc 1860
gtgttcattc cctgtggcca tctggtcgtg tgcaaagact gcgctccctc tctgaggaag 1920
tgtcccatct gtagagggac catcaagggc acagtgcgca catttctctc ctgaacaaga 1980
ctaattggtcc atggctgcaa cttcagccag gaggaagttc actgtcactc ccagttccat 2040
tcggaacttg aggccagcct ggatagcacg agacaccgcc aaacacacaa atataaacat 2100
gaaaaacttt tgtctgaagt caagaatgaa tgaattactt atataataat ttttaattgg 2160
ttccttaaaa gtgctatttt ttcccaactc agaaaattgt tttctgtaaa catatttaca 2220
tacttaactgc atctaaagta ttcataatatt catatattca gatgtcatga gagagggttt 2280
tgttcttggt cctgaaaagc tgggtttatca tctgatcagc atatactgcg caacgggcag 2340
ggctagaatc catgaaccaa gctgcaaaga tctcacgcta aataaggcgg aaagatttgg 2400
agaaacgaaa ggaaattctt tcctgtccaa tgtatactct tcagactaat gacctcttcc 2460
tatcaagcct tcta 2474

```

<210> 40  
 <211> 602  
 <212> PRT  
 <213> Mus musculus

```

<400> 40
Met Asn Met Val Gln Asp Ser Ala Phe Leu Ala Lys Leu Met Lys Ser
 1             5             10             15
Ala Asp Thr Phe Glu Leu Lys Tyr Asp Phe Ser Cys Glu Leu Tyr Arg
      20             25             30
Leu Ser Thr Tyr Ser Ala Phe Pro Arg Gly Val Pro Val Ser Glu Arg
    35             40             45
Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Ala Asn Asp Lys Val
   50             55             60
Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp Lys Gln Gly Asp
  65             70             75             80
Ser Pro Met Glu Lys His Arg Lys Leu Tyr Pro Ser Cys Asn Phe Val
      85             90             95
Gln Thr Leu Asn Pro Ala Asn Ser Leu Glu Ala Ser Pro Arg Pro Ser
    100            105            110
Leu Pro Ser Thr Ala Met Ser Thr Met Pro Leu Ser Phe Ala Ser Ser
    115            120            125
Glu Asn Thr Gly Tyr Phe Ser Gly Ser Tyr Ser Ser Phe Pro Ser Asp
   130            135            140

```

Pro	Val	Asn	Phe	Arg	Ala	Asn	Gln	Asp	Cys	Pro	Ala	Leu	Ser	Thr	Ser
145					150					155					160
Pro	Tyr	His	Phe	Ala	Met	Asn	Thr	Glu	Lys	Ala	Arg	Leu	Leu	Thr	Tyr
				165					170						175
Glu	Thr	Trp	Pro	Leu	Ser	Phe	Leu	Ser	Pro	Ala	Lys	Leu	Ala	Lys	Ala
			180					185					190		
Gly	Phe	Tyr	Tyr	Ile	Gly	Pro	Gly	Asp	Arg	Val	Ala	Cys	Phe	Ala	Cys
		195					200					205			
Asp	Gly	Lys	Leu	Ser	Asn	Trp	Glu	Arg	Lys	Asp	Asp	Ala	Met	Ser	Glu
	210					215					220				
His	Gln	Arg	His	Phe	Pro	Ser	Cys	Pro	Phe	Leu	Lys	Asp	Leu	Gly	Gln
225					230					235					240
Ser	Ala	Ser	Arg	Tyr	Thr	Val	Ser	Asn	Leu	Ser	Met	Gln	Thr	His	Ala
				245					250					255	
Ala	Arg	Ile	Arg	Thr	Phe	Ser	Asn	Trp	Pro	Ser	Ser	Ala	Leu	Val	His
			260					265					270		
Ser	Gln	Glu	Leu	Ala	Ser	Ala	Gly	Phe	Tyr	Tyr	Thr	Gly	His	Ser	Asp
		275					280					285			
Asp	Val	Lys	Cys	Leu	Cys	Cys	Asp	Gly	Gly	Leu	Arg	Cys	Trp	Glu	Ser
	290					295					300				
Gly	Asp	Asp	Pro	Trp	Val	Glu	His	Ala	Lys	Trp	Phe	Pro	Arg	Cys	Glu
305					310					315					320
Tyr	Leu	Leu	Arg	Ile	Lys	Gly	Gln	Glu	Phe	Val	Ser	Gln	Val	Gln	Ala
				325					330					335	
Gly	Tyr	Pro	His	Leu	Leu	Glu	Gln	Leu	Leu	Ser	Thr	Ser	Asp	Ser	Pro
		340						345					350		
Glu	Asp	Glu	Asn	Ala	Asp	Ala	Ala	Ile	Val	His	Phe	Gly	Pro	Gly	Glu
		355					360					365			
Ser	Ser	Glu	Asp	Val	Val	Met	Met	Ser	Thr	Pro	Val	Val	Lys	Ala	Ala
	370					375					380				
Leu	Glu	Met	Gly	Phe	Ser	Arg	Ser	Leu	Val	Arg	Gln	Thr	Val	Gln	Trp
385					390					395					400
Gln	Ile	Leu	Ala	Thr	Gly	Glu	Asn	Tyr	Arg	Thr	Val	Ser	Asp	Leu	Val
				405					410					415	
Ile	Gly	Leu	Leu	Asp	Ala	Glu	Asp	Glu	Met	Arg	Glu	Glu	Gln	Met	Glu
			420					425					430		
Gln	Ala	Ala	Glu	Glu	Glu	Glu	Ser	Asp	Asp	Leu	Ala	Leu	Ile	Arg	Lys
		435					440					445			
Asn	Lys	Met	Val	Leu	Phe	Gln	His	Leu	Thr	Cys	Val	Thr	Pro	Met	Leu
	450					455					460				
Tyr	Cys	Leu	Leu	Ser	Ala	Arg	Ala	Ile	Thr	Glu	Gln	Glu	Cys	Asn	Ala
465					470					475					480
Val	Lys	Gln	Lys	Pro	His	Thr	Leu	Gln	Ala	Ser	Thr	Leu	Ile	Asp	Thr
				485					490					495	
Val	Leu	Ala	Lys	Gly	Asn	Thr	Ala	Ala	Thr	Ser	Phe	Arg	Asn	Ser	Leu
			500					505					510		
Arg	Glu	Ile	Asp	Pro	Ala	Leu	Tyr	Arg	Asp	Ile	Phe	Val	Gln	Gln	Asp
		515					520					525			
Ile	Arg	Ser	Leu	Pro	Thr	Asp	Asp	Ile	Ala	Ala	Leu	Pro	Met	Glu	Glu
	530					535					540				
Gln	Leu	Arg	Pro	Leu	Pro	Glu	Asp	Arg	Met	Cys	Lys	Val	Cys	Met	Asp
545					550					555					560
Arg	Glu	Val	Ser	Ile	Val	Phe	Ile	Pro	Cys	Gly	His	Leu	Val	Val	Cys
				565					570					575	
Lys	Asp	Cys	Ala	Pro	Ser	Leu	Arg	Lys	Cys	Pro	Ile	Cys	Arg	Gly	Thr
			580					585					590		
Ile	Lys	Gly	Thr	Val	Arg	Thr	Phe	Leu	Ser						
		595					600								

<210> 41  
 <211> 2416  
 <212> DNA  
 <213> Mus musculus

<400> 41

```

ctgtggtgga gatctattgt ccaagtgggtg agaaacttca tctggaagtt taagcgggtca 60
gaaatactat tactactcat ggacaaaact gtctcccaga gactcgccca aggtacctta 120
caccacaaaa cttaaacgta taatggagaa gagcacaatc ttgtcaaatt ggacaaagga 180
gagcgaagaa aaaatgaagt ttgacttttc gtgtgaactc taccgaatgt ctacatatc 240
agcttttccc aggggagttc ctgtctcaga gaggagtctg gctcgtgctg gcttttatta 300
tacagggtgtg aatgacaaag tcaagtgcct ctgctgtggc ctgatgttgg ataactggaa 360
acaaggggac agtcctgttg aaaagcacag acagttctat cccagctgca gctttgtaca 420
gactctgctt tcagccagtc tgcagctctc atctaagaat atgtctcctg tgaaaagtag 480
atttgcacat tgcgtcacctc tggaaacgagg tggcattcac tccaacctgt gctctagccc 540
tcttaattct agagcagtggt aagacttctc atcaaggatg gatccctgca gctatgccat 600
gagtacagaa gaggccagat ttcttactta cagtatgtgg cctttaagtt ttctgtcacc 660
agcagagctg gccagagctg gcttctatta catagggcct ggagacaggg tggcctgttt 720
tgctgtgtgt gggaaactga gcaactggga accaaaggat tatgctatgt cagagcaccg 780
cagacatttt cccactgtc catttctgga aaatacttca gaaacacaga ggttttagat 840
atcaaactta agtatgcaga cacactctgc tcgattgagg acatttctgt actggccacc 900
tagtgttcct gttcagcccg agcagcttgc aagtgcctga ttctattacg tggatcgcaa 960
tgatgatgtc aagtgccttt gttgtgatgg tggcctgaga tgttggaac ctggagatga 1020
ccctgggata gaacacgcca aatggtttcc aagggtgtgag ttcttgatac ggatgaaggg 1080
tcaggagttt gttgatgaga ttcaagctag atatcctcat cttcttgagc agctgttgtc 1140
cacttcagac accccaggag aagaaaatgc tgaccctaca gagacagtgg tgcatttttg 1200
ccctggagaa agttcgaaag atgtcgtcat gatgagcacg cctgtgggta aagcagcctt 1260
ggaaatgggc ttcagtagga gcctgggtgag acagacggtt cagcggcaga tcctggccac 1320
tggtgagaac tacaggaccg tcaatgatat tgtctcagta cttttgaatg ctgaagatga 1380
gagaagagaa gaggagaagg aaagacagac tgaagagatg gcatcaggtg acttatcact 1440
gattcggaag aatagaatgg cctcttttca acagttgaca catgtccttc ctatcctgga 1500
taatcttctt gaggccagtg taattacaaa acaggaacat gatattatta gacagaaaac 1560
acagataccc ttacaagcaa gagagcttat tgacaccgtt ttagtcaagg gaaatgctgc 1620
agccaacatc ttcaaaaact ctctgaaggg aattgactcc acgttatatg aaaacttatt 1680
tgtggaaaag aatatgaagt atattccaac agaagacgtt tcaggccttg cattggaaga 1740
gcagttgcgg agattacaag aagaacgaac ttgcaaagtg tgtatggaca gagagggttc 1800
tattgtgttc attccgtgtg gtcacttagt agtctgccag gaatgtgcc cttctctaag 1860
gaagtgcctc atctgcaggg ggacaatcaa ggggactgtg cgcacatttc tctcatgagt 1920
gaagaatggt ctgaaagtat tgttggacat cagaagctgt cagaacaaag aatgaactac 1980
tgatttcagc tcttcagcag gacattctac tctctttcaa gattagtaat cttgctttat 2040
gaagggtagc attgtatatt taagcttagt ctggttgcaag ggaagggtcta tgctgttgag 2100
ctacaggact gtgtctgttc cagagcagga gttgggatgc ttgctgtatg tccttcagga 2160
cttcttggga tttgggaatt tggggaaagc tttggaatcc agtgatgtgg agctcagaaa 2220
tcctggaacc agtgactctg gtactcagta gatagggtac cctgtacttc ttggtgcttt 2280
tccagtctgg gaaataagga ggaatctgct gctggtaaaa atttgctgga tgtgagaaat 2340
agatgaaagt gtttcgggtg ggggcgtgca tcagtgtagt gtgtgcaggg atgtatgcag 2400
gccaaacact gtgtag 2416

```

<210> 42  
 <211> 591  
 <212> PRT  
 <213> Mus musculus

<400> 42

```

Met Glu Lys Ser Thr Ile Leu Ser Asn Trp Thr Lys Glu Ser Glu Glu
1           5           10           15
Lys Met Lys Phe Asp Phe Ser Cys Glu Leu Tyr Arg Met Ser Thr Tyr
20           25           30
Ser Ala Phe Pro Arg Gly Val Pro Val Ser Glu Arg Ser Leu Ala Arg

```



Phe	Val	Glu	Lys	Asn	Met	Lys	Tyr	Ile	Pro	Thr	Glu	Asp	Val	Ser	Gly
		515					520					525			
Leu	Ser	Leu	Glu	Glu	Gln	Leu	Arg	Arg	Leu	Gln	Glu	Glu	Arg	Thr	Cys
	530					535					540				
Lys	Val	Cys	Met	Asp	Arg	Glu	Val	Ser	Ile	Val	Phe	Ile	Pro	Cys	Gly
545					550					555					560
His	Leu	Val	Val	Cys	Gln	Glu	Cys	Ala	Pro	Ser	Leu	Arg	Lys	Cys	Pro
				565					570					575	
Ile	Cys	Arg	Gly	Thr	Ile	Lys	Gly	Thr	Val	Arg	Thr	Phe	Leu	Ser	
			580					585					590		

<210> 43  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> based on Homo sapiens

<400> 43  
 Met Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu  
 1 5 10

<210> 44  
 <211> 635  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> based on Homo sapiens, Mus musculus, Cydia pomonella, and Drosophila melanogaster.

<221> VARIANT  
 <222> 1,2,3,635  
 <223> Xaa=any amino acid or may be absent.

<221> VARIANT  
 <222> (1)...(634)  
 <223> Xaa=any amino acid.

<400> 44  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20 25 30  
 Leu Xaa Thr Phe Xaa Xaa Phe Pro Xaa Xaa Xaa Pro Val Ser Xaa Xaa  
 35 40 45  
 Xaa Leu Ala Arg Ala Gly Phe Xaa Tyr Thr Gly Xaa Xaa Asp Xaa Val  
 50 55 60  
 Xaa Cys Phe Xaa Cys Xaa Xaa Xaa Xaa Asp Xaa Trp Xaa Xaa Gly Asp  
 65 70 75 80  
 Ser Xaa Xaa Xaa Xaa His Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 85 90 95  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 100 105 110  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 115 120 125

Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Tyr	Xaa	Xaa	Xaa	Xaa	Xaa
130						135					140				
Xaa	Xaa	Xaa	Xaa	Xaa	Arg	Xaa	Xaa	Glu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
145					150					155					160
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Asp	Xaa	Ser	Asp	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				165					170					175	
Xaa	Xaa	Xaa	Met	Xaa	Xaa	Glu	Glu	Ala	Arg	Leu	Xaa	Thr	Phe	Xaa	Xaa
			180					185					190		
Trp	Pro	Xaa	Xaa	Xaa	Xaa	Leu	Xaa	Pro	Xaa	Glu	Leu	Ala	Xaa	Ala	Gly
	195						200					205			
Phe	Tyr	Tyr	Xaa	Gly	Xaa	Xaa	Asp	Xaa	Val	Xaa	Cys	Phe	Xaa	Cys	Gly
	210					215					220				
Gly	Lys	Leu	Xaa	Asn	Trp	Glu	Pro	Xaa	Asp	Xaa	Ala	Xaa	Ser	Glu	His
225					230					235					240
Xaa	Arg	His	Phe	Pro	Xaa	Cys	Pro	Phe	Val	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				245					250						255
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Phe	Xaa	Xaa
				260					265				270		
Ser	Xaa	Xaa	Xaa	Pro	Xaa	Asn	Pro	Xaa	Met	Ala	Xaa	Xaa	Xaa	Ala	Arg
	275						280					285			
Xaa	Xaa	Thr	Phe	Xaa	Xaa	Trp	Pro	Xaa	Ser	Xaa	Xaa	Val	Xaa	Xaa	Glu
	290					295					300				
Gln	Leu	Ala	Xaa	Ala	Gly	Phe	Tyr	Tyr	Xaa	Gly	Xaa	Gly	Asp	Xaa	Val
305					310					315					320
Lys	Cys	Phe	Xaa	Cys	Xaa	Gly	Gly	Leu	Xaa	Xaa	Trp	Xaa	Xaa	Xaa	Asp
				325					330						335
Asp	Pro	Trp	Xaa	Gln	His	Ala	Lys	Trp	Phe	Pro	Xaa	Cys	Xaa	Tyr	Leu
			340					345				350			
Xaa	Xaa	Xaa	Lys	Gly	Gln	Glu	Tyr	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			355				360					365			
Xaa	Xaa	Leu	Xaa	Glu	Xaa	Leu	Xaa	Xaa	Thr	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
	370					375						380			
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Pro	Xaa	Xaa	Xaa	Xaa
385						390					395				400
Xaa	Xaa	Asp	Xaa	Val	Xaa	Xaa	Xaa	Xaa	Pro	Xaa	Val	Xaa	Xaa	Ala	Xaa
				405					410					415	
Xaa	Met	Gly	Phe	Xaa	Xaa	Xaa	Xaa	Val	Lys	Xaa	Xaa	Xaa	Xaa	Xaa	Lys
			420					425					430		
Ile	Xaa	Xaa	Xaa	Gly	Xaa	Xaa	Tyr	Xaa	Xaa	Xaa	Xaa	Xaa	Leu	Val	Xaa
			435				440						445		
Asp	Leu	Xaa	Xaa	Ala	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Glu	Xaa	Xaa	Xaa
	450					455						460			
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
465						470					475				480
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				485					490						495
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				500					505					510	
Xaa	Xaa	Xaa	Xaa	Gln	Xaa	Xaa	Leu	Gln	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				515				520					525		
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
	530						535					540			
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
545						550					555				560
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Ser	Xaa	Glu	Glu
				565					570					575	
Gln	Leu	Arg	Arg	Leu	Xaa	Glu	Glu	Xaa	Leu	Cys	Lys	Xaa	Cys	Met	Asp
			580					585					590		
Xaa	Glu	Val	Xaa	Xaa	Val	Phe	Xaa	Pro	Cys	Gly	His	Leu	Val	Xaa	Cys

	595		600		605
Xaa	Xaa Cys Ala Xaa Ser Val Xaa Lys Cys Pro Met Cys Arg Xaa Xaa				
610	615	620			
Ile	Xaa Xaa Xaa Xaa Xaa Xaa Phe Leu Ser Xaa				
625	630	635			

---

<210> 45  
 <211> 204  
 <212> DNA  
 <213> Homo sapiens

<400> 45  
 gagttttaata gattaataaac ttttgctaata tttccaagtgt gtagtcctgt ttcagcatca 60  
 acactggcac gagcaggggtt tctttataact ggtgaaggag ataccgtgcg gtgcttttagt 120  
 tgtcatgcag ctgtagatag atggcaatat ggagactcag cagttggaag acacaggaaa 180  
 gtatcccaaa attgcagatt tattc 204

<210> 46  
 <211> 204  
 <212> DNA  
 <213> Homo sapiens

<400> 46  
 gaagaagcta gattaaagtc ctttcagaac tggccagact atgctcacct aacccaaga 60  
 gagttagcaa gtgctggact ctactacaca ggtattgggtg accaagtgcg gtgctttttagt 120  
 tgttggtggaa aactgaaaaa ttgggaacct tgtgatcgtg cctgggtcaga acacaggcga 180  
 cactttccta attgcttctt tggt 204

<210> 47  
 <211> 198  
 <212> DNA  
 <213> Homo sapiens

<400> 47  
 tatgaagcac ggatctttac ttttgggaca tggatataact cagttaacaa ggagcagctt 60  
 gcaagagctg gattttatgc tttaggtgaa ggtgataaag taaagtgcct tcactgtgga 120  
 ggagggctaa ctgattggaa gccagtgaa gacccttggg aacaacatgc taaatgggtat 180  
 ccaggggtgca aatatctg 198

<210> 48  
 <211> 138  
 <212> DNA  
 <213> Homo sapiens

<400> 48  
 gagcagctaa ggcgccctgca agaggagaag ctttgcaaaa tctgtatgga tagaaatatt 60  
 gctatcgttt ttgttccttg tggacatcta gtcacttgta aacaatgtgc tgaagcagtt 120  
 gacaagtgtc ccatgtgc 138

<210> 49  
 <211> 204  
 <212> DNA  
 <213> Mus musculus

<400> 49  
 gagttttaata gattaataaac atttgctaac tttccaagta gtagtcctgt ttcagcatca 60  
 acattggcgc gagctgggtt tctttataacc ggtgaaggag acaccgtgca atgtttcagt 120  
 tgtcatgcgg caatagatag atggcagtat ggagactcag ctggttgaag acacaggaga 180

atatccccaa attgcagatt tatc

204

<210> 50

<211> 204

<212> DNA

<213> ~~Mus musculus~~

<400> 50

gaagaagcca gattgaagtc atttcagaac tggccggact atgctcattt aacccccaga 60  
gagtttagcta gtgctggcct ctactacaca ggggctgatg atcaagtgca atgcttttgt 120  
tgtgggggaa aactgaaaaa ttgggaaccc tgtgatcgtg cctggtcaga acacaggaga 180  
cactttccca attgcttttt tgtt 204

<210> 51

<211> 198

<212> DNA

<213> Mus musculus

<400> 51

tatgaagcac ggatcgttac ttttggaaca tggatatact cagttaacaa ggagcagctt 60  
gcaagagctg gattttatgc tttaggtgaa ggcgataaag tgaagtgtt cactgtgga 120  
ggaggggtca cggattggaa gccaaagtga gaccctggg accagcatgc taagtgtac 180  
ccaggggtgca aataccta 198

<210> 52

<211> 138

<212> DNA

<213> Mus musculus

<400> 52

gagcagctaa ggcgccctaca agaggagaag ctttccaaaa tctgtatgga tagaaatatt 60  
gctatcgttt tttttccttg tggacatctg gccacttgta aacagtgtgc agaagcagtt 120  
gacaaatgtc ccatgtgc 138

<210> 53

<211> 204

<212> DNA

<213> Homo sapiens

<400> 53

gaactgtacc gaatgtctac gtattccact tttcctgctg gggttcctgt ctcagaaaagg 60  
agtcttgctc gtgctgggtt ctattacact ggtgtgaatg acaagggtcaa atgcttctgt 120  
tgtggcctga tgctggataa ctggaaaaga ggagacagtc ctactgaaaa gcataaaaag 180  
ttgtatccta gctgcagatt cggt 204

<210> 54

<211> 201

<212> DNA

<213> Homo sapiens

<400> 54

gaaaatgcc a gattacttac ttttcagaca tggccattga cttttctgtc gccaacagat 60  
ctggcacgag caggctttta ctacatagga cctggagaca gagtggcttg ctttgcctgt 120  
ggtggaaaat tgagcaattg ggaaccgaag gataatgcta tgtcagaaca cctgagacat 180  
tttcccaaat gcccatttat a 201

<210> 55

<211> 204

<212> DNA

<213> Homo sapiens

<400> 55

```
catgcagccc gctttaaaac attctttaac tggccctcta gtgttctagt taatcctgag 60
cagcttgcaa gtgcggggtt ttattatgtg ggtaacagtg atgatgtcaa atgcttttgc 120
tgtgatggtg-gaetcaggtg-ttgggaatct-ggagatgac-catgggttca-acatgccaaag-180
tggtttccaa ggtgtgagta cttg 204
```

<210> 56

<211> 138

<212> DNA

<213> Homo sapiens

<400> 56

```
gaacaattgc ggagactacc agaagaaaga acatgtaaag tgtgtatgga caaagaagtg 60
tccatagtgt ttattccttg tggtcactta gtagtatgca aagattgtgc tccttcttta 120
agaaagtgtc ctatttgt 138
```

<210> 57

<211> 203

<212> DNA

<213> Mus musculus

<400> 57

```
agctgtaccg attgtccacg tattcagctt tccccagggg agttcctgtg tcagaaagga 60
gtctggctcg tgctggcttt tactacactg gtgccaatga caagggtcaag tgcttctgct 120
gtggcctgat gctagacaac tggaaacaag gggacagtcc catggagaag cacagaaagt 180
tgtacccag ctgcaacttt gta 203
```

<210> 58

<211> 201

<212> DNA

<213> Mus musculus

<400> 58

```
gagaaggcca gattactcac ctatgaaaca tggccattgt cttttctgtc accagcaaag 60
ctggccaaag caggcttcta ctacatagga cctggagata gagggtcctg ctttgcgtgc 120
gatgggaaac tgagcaactg ggaacgtaag gatgatgcta tgtcagagca ccagagggcat 180
tccccagct gtccgttctt a 201
```

<210> 59

<211> 204

<212> DNA

<213> Mus musculus

<400> 59

```
cacgcagccc gtattagaac attctctaac tggccttcta gtgcactagt tcattcccag 60
gaacttgcaa gtgcggggtt ttattataga ggacacagtg atgatgtcaa gtgtttatgc 120
tgtgatggtg ggctgaggtg ctgggaatct ggagatgacc cctgggtgga acatgccaaag 180
tggtttccaa ggtgtgagta cttg 204
```

<210> 60

<211> 138

<212> DNA

<213> Mus musculus

<400> 60

```
gaacagttgc ggcccctccc ggaggacaga atgtgtaaag tgtgtatgga ccgagaggta 60
tccatcgtgt tcattccctg tggccatctg gtcgtgtgca aagactgcgc tccctctctg 120
```

aggaagtgtc ccatctgt

138

<210> 61

<211> 204

<212> DNA

<213> Homo sapiens

<400> 61

gaactctaca gaatgtctac atattcaact ttccccgccg ggggtgcctgt ctcagaaaagg 60  
agtcttgctc gtgctgggtt ttattatact ggtgtgaatg acaagggtcaa atgctttctgt 120  
tgtggcctga tgctggataa ctggaaacta ggagacagtc ctattcaaaa gcataaacag 180  
ctatatccta gctgtagctt tatt 204

<210> 62

<211> 201

<212> DNA

<213> Homo sapiens

<400> 62

gaagaagcca gatttcttac ctaccatattg tggccattaa cttttttgtc accatcagaa 60  
ttggcaagag ctgggtttta ttatatagga cctggagata gggtagcctg ctttgctgt 120  
ggtgggaagc tcagtaactg ggaaccaaag gatgatgcta tgtcagaaca ccggaggcat 180  
tttcccaact gtccattttt g 201

<210> 63

<211> 204

<212> DNA

<213> Homo sapiens

<400> 63

catgcagctc gaatgagaac atttatgtac tggccatcta gtgttccagt tcagcctgag 60  
cagcttgcaa gtgctgggtt ttattatgtg ggtcgcaatg atgatgtcaa atgcttttgt 120  
tgtgatggtg gcttgagggtg ttgggaatct ggagatgatc catgggtaga acatgccaaag 180  
tggtttccaa ggtgtgagtt cttg 204

<210> 64

<211> 138

<212> DNA

<213> Mus musculus

<400> 64

gaacaattga ggaggttgca agaagaacga acttgtaaag tgtgtatgga caaagaagtt 60  
tctgttgat ttattccttg tggatcatctg gtagtatgcc aggaatgtgc cccttctcta 120  
agaaaatgcc ctatttgc 138

<210> 65

<211> 204

<212> DNA

<213> Mus musculus

<400> 65

gaactctacc gaatgtctac atattcagct tttcccaggg gagttcctgt ctcagagagg 60  
agtctggctc gtgctggctt ttattataca ggtgtgaatg acaaagtcaa gtgcttctgc 120  
tgtggcctga tgctggataa ctggaaacaa ggggacagtc ctgttgaaaa gcacagacag 180  
ttctatccca gctgcagctt tgta 204

<210> 66

<211> 201

<212> DNA

<213> Mus musculus

<400> 66

```
gaagaggcca gatttcttac ttacagtatg tggcctttaa gttttctgtc accagcagag 60
ctggccagag ctggcttcta ttacataggg cctggagaca gggcggcctg ttttgccctgt 120
ggcgggaaac tgagcaactg ggaaccaaag gattatgcta tgcagagca cgcagacat 180
tttccccact gtccatttct g 201
```

<210> 67

<211> 204

<212> DNA

<213> Mus musculus

<400> 67

```
cactctgctc gattgaggac atttctgtac tggccaccta gtgttctgt tcagcccag 60
cagcttgcaa gtgctggatt ctattacgtg gatcgcaatg atgatgtcaa gtgcctttgt 120
tgtgatgggtg gcttgagatg ttgggaacct ggagatgacc cctggataga acacgcaaaa 180
tggtttccaa ggtgtgagtt cttg 204
```

<210> 68

<211> 114

<212> DNA

<213> Mus musculus

<400> 68

```
gaacgaactt gcaaagtgtg tatggacaga gaggtttcta ttgtgttcat tccgtgtggt 60
catctagtag tctgccagga atgtgcccct tctctaagga agtgcccccatt ctgc 114
```

<210> 69

<211> 68

<212> PRT

<213> Homo sapiens

<400> 69

```
Glu Phe Asn Arg Leu Lys Thr Phe Ala Asn Phe Pro Ser Gly Ser Pro
1 5 10 15
Val Ser Ala Ser Thr Leu Ala Arg Ala Gly Phe Leu Tyr Thr Gly Glu
20 25 30
Gly Asp Thr Val Arg Cys Phe Ser Cys His Ala Ala Val Asp Arg Trp
35 40 45
Gln Tyr Gly Asp Ser Ala Val Gly Arg His Arg Lys Val Ser Pro Asn
50 55 60
Cys Arg Phe Ile
65
```

<210> 70

<211> 68

<212> PRT

<213> Homo sapiens

<400> 70

```
Glu Glu Ala Arg Leu Lys Ser Phe Gln Asn Trp Pro Asp Tyr Ala His
1 5 10 15
Leu Thr Pro Arg Glu Leu Ala Ser Ala Gly Leu Tyr Tyr Thr Gly Ile
20 25 30
Gly Asp Gln Val Gln Cys Phe Cys Cys Gly Gly Lys Leu Lys Asn Trp
35 40 45
Glu Pro Cys Asp Arg Ala Trp Ser Glu His Arg Arg His Phe Pro Asn
```

50  
Cys Phe Phe Val  
65

55

60

<210> 71  
<211> 66  
<212> PRT  
<213> Homo sapiens

<400> 71  
Tyr Glu Ala Arg Ile Phe Thr Phe Gly Thr Trp Ile Tyr Ser Val Asn  
1 5 10 15  
Lys Glu Gln Leu Ala Arg Ala Gly Phe Tyr Ala Leu Gly Glu Gly Asp  
20 25 30  
Lys Val Lys Cys Phe His Cys Gly Gly Gly Leu Thr Asp Trp Lys Pro  
35 40 45  
Ser Glu Asp Pro Trp Glu Gln His Ala Lys Trp Tyr Pro Gly Cys Lys  
50 55 60  
Tyr Leu  
65

<210> 72  
<211> 46  
<212> PRT  
<213> Homo sapiens

<400> 72  
Glu Gln Leu Arg Arg Leu Gln Glu Glu Lys Leu Cys Lys Ile Cys Met  
1 5 10 15  
Asp Arg Asn Ile Ala Ile Val Phe Val Pro Cys Gly His Leu Val Thr  
20 25 30  
Cys Lys Gln Cys Ala Glu Ala Val Asp Lys Cys Pro Met Cys  
35 40 45

<210> 73  
<211> 68  
<212> PRT  
<213> Mus musculus

<400> 73  
Glu Phe Asn Arg Leu Lys Thr Phe Ala Asn Phe Pro Ser Ser Ser Pro  
1 5 10 15  
Val Ser Ala Ser Thr Leu Ala Arg Ala Gly Phe Leu Tyr Thr Gly Glu  
20 25 30  
Gly Asp Thr Val Gln Cys Phe Ser Cys His Ala Ala Ile Asp Arg Trp  
35 40 45  
Gln Tyr Gly Asp Ser Ala Val Gly Arg His Arg Arg Ile Ser Pro Asn  
50 55 60  
Cys Arg Phe Ile  
65

<210> 74  
<211> 68  
<212> PRT  
<213> Mus musculus

<400> 74

Glu Glu Ala Arg Leu Lys Ser Phe Gln Asn Trp Pro Asp Tyr Ala His  
1 5 10 15  
Leu Thr Pro Arg Glu Leu Ala Ser Ala Gly Leu Tyr Tyr Thr Gly Ala  
20 25 30  
~~Asp Asp Gln Val Gln Cys Phe Cys Cys Gly Gly Lys Leu Lys Asn Trp~~  
35 40 45  
Glu Pro Cys Asp Arg Ala Trp Ser Glu His Arg Arg His Phe Pro Asn  
50 55 60  
Cys Phe Phe Val  
65

<210> 75

<211> 66

<212> PRT

<213> Mus musculus

<400> 75

Tyr Glu Ala Arg Ile Val Thr Phe Gly Thr Trp Ile Tyr Ser Val Asn  
1 5 10 15  
Lys Glu Gln Leu Ala Arg Ala Gly Phe Tyr Ala Leu Gly Glu Gly Asp  
20 25 30  
Lys Val Lys Cys Phe His Cys Gly Gly Gly Leu Thr Asp Trp Lys Pro  
35 40 45  
Ser Glu Asp Pro Trp Asp Gln His Ala Lys Cys Tyr Pro Gly Cys Lys  
50 55 60  
Tyr Leu  
65

<210> 76

<211> 46

<212> PRT

<213> Mus musculus

<400> 76

Glu Gln Leu Arg Arg Leu Gln Glu Glu Lys Leu Ser Lys Ile Cys Met  
1 5 10 15  
Asp Arg Asn Ile Ala Ile Val Phe Phe Pro Cys Gly His Leu Ala Thr  
20 25 30  
Cys Lys Gln Cys Ala Glu Ala Val Asp Lys Cys Pro Met Cys  
35 40 45

<210> 77

<211> 68

<212> PRT

<213> Homo sapiens

<400> 77

Glu Leu Tyr Arg Met Ser Thr Tyr Ser Thr Phe Pro Ala Gly Val Pro  
1 5 10 15  
Val Ser Glu Arg Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Val  
20 25 30  
Asn Asp Lys Val Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp  
35 40 45  
Lys Arg Gly Asp Ser Pro Thr Glu Lys His Lys Lys Leu Tyr Pro Ser  
50 55 60

Cys Arg Phe Val  
65

<210> 78

<211> 67

<212> PRT

<213> Homo sapiens

<400> 78

Glu Asn Ala Arg Leu Leu Thr Phe Gln Thr Trp Pro Leu Thr Phe Leu  
1 5 10 15  
Ser Pro Thr Asp Leu Ala Arg Ala Gly Phe Tyr Tyr Ile Gly Pro Gly  
20 25 30  
Asp Arg Val Ala Cys Phe Ala Cys Gly Gly Lys Leu Ser Asn Trp Glu  
35 40 45  
Pro Lys Asp Asn Ala Met Ser Glu His Leu Arg His Phe Pro Lys Cys  
50 55 60  
Pro Phe Ile  
65

<210> 79

<211> 68

<212> PRT

<213> Homo sapiens

<400> 79

His Ala Ala Arg Phe Lys Thr Phe Phe Asn Trp Pro Ser Ser Val Leu  
1 5 10 15  
Val Asn Pro Glu Gln Leu Ala Ser Ala Gly Phe Tyr Tyr Val Gly Asn  
20 25 30  
Ser Asp Asp Val Lys Cys Phe Cys Cys Asp Gly Gly Leu Arg Cys Trp  
35 40 45  
Glu Ser Gly Asp Asp Pro Trp Val Gln His Ala Lys Trp Phe Pro Arg  
50 55 60  
Cys Glu Tyr Leu  
65

<210> 80

<211> 46

<212> PRT

<213> Homo sapiens

<400> 80

Glu Gln Leu Arg Arg Leu Pro Glu Glu Arg Thr Cys Lys Val Cys Met  
1 5 10 15  
Asp Lys Glu Val Ser Ile Val Phe Ile Pro Cys Gly His Leu Val Val  
20 25 30  
Cys Lys Asp Cys Ala Pro Ser Leu Arg Lys Cys Pro Ile Cys  
35 40 45

<210> 81

<211> 68

<212> PRT

<213> Mus musculus

<400> 81

Glu Leu Tyr Arg Leu Ser Thr Tyr Ser Ala Phe Pro Arg Gly Val Pro  
1 5 10 15  
Val Ser Glu Arg Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Ala  
20 25 30  
~~Asn Asp Lys Val Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp~~  
35 40 45  
Lys Gln Gly Asp Ser Pro Met Glu Lys His Arg Lys Leu Tyr Pro Ser  
50 55 60  
Cys Asn Phe Val  
65

<210> 82

<211> 67

<212> PRT

<213> Mus musculus

<400> 82

Glu Lys Ala Arg Leu Leu Thr Tyr Glu Thr Trp Pro Leu Ser Phe Leu  
1 5 10 15  
Ser Pro Ala Lys Leu Ala Lys Ala Gly Phe Tyr Tyr Ile Gly Pro Gly  
20 25 30  
Asp Arg Val Ala Cys Phe Ala Cys Asp Gly Lys Leu Ser Asn Trp Glu  
35 40 45  
Arg Lys Asp Asp Ala Met Ser Glu His Gln Arg His Phe Pro Ser Cys  
50 55 60  
Pro Phe Leu  
65

<210> 83

<211> 68

<212> PRT

<213> Mus musculus

<400> 83

His Ala Ala Arg Ile Arg Thr Phe Ser Asn Trp Pro Ser Ser Ala Leu  
1 5 10 15  
Val His Ser Gln Glu Leu Ala Ser Ala Gly Phe Tyr Tyr Thr Gly His  
20 25 30  
Ser Asp Asp Val Lys Cys Leu Cys Cys Asp Gly Gly Leu Arg Cys Trp  
35 40 45  
Glu Ser Gly Asp Asp Pro Trp Val Glu His Ala Lys Trp Phe Pro Arg  
50 55 60  
Cys Glu Tyr Leu  
65

<210> 84

<211> 46

<212> PRT

<213> Mus musculus

<400> 84

Glu Gln Leu Arg Pro Leu Pro Glu Asp Arg Met Cys Lys Val Cys Met  
1 5 10 15  
Asp Arg Glu Val Ser Ile Val Phe Ile Pro Cys Gly His Leu Val Val  
20 25 30

Cys Lys Asp Cys Ala Pro Ser Leu Arg Lys Cys Pro Ile Cys  
 35 40 45

<210> 85

<211> 68

<212> PRT

<213> Homo sapiens

<400> 85

Glu Leu Tyr Arg Met Ser Thr Tyr Ser Thr Phe Pro Ala Gly Val Pro  
 1 5 10 15  
 Val Ser Glu Arg Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Val  
 20 25 30  
 Asn Asp Lys Val Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp  
 35 40 45  
 Lys Leu Gly Asp Ser Pro Ile Gln Lys His Lys Gln Leu Tyr Pro Ser  
 50 55 60  
 Cys Ser Phe Ile  
 65

<210> 86

<211> 67

<212> PRT

<213> Homo sapiens

<400> 86

Glu Glu Ala Arg Phe Leu Thr Tyr His Met Trp Pro Leu Thr Phe Leu  
 1 5 10 15  
 Ser Pro Ser Glu Leu Ala Arg Ala Gly Phe Tyr Tyr Ile Gly Pro Gly  
 20 25 30  
 Asp Arg Val Ala Cys Phe Ala Cys Gly Gly Lys Leu Ser Asn Trp Glu  
 35 40 45  
 Pro Lys Asp Asp Ala Met Ser Glu His Arg Arg His Phe Pro Asn Cys  
 50 55 60  
 Pro Phe Leu  
 65

<210> 87

<211> 68

<212> PRT

<213> Homo sapiens

<400> 87

His Ala Ala Arg Met Arg Thr Phe Met Tyr Trp Pro Ser Ser Val Pro  
 1 5 10 15  
 Val Gln Pro Glu Gln Leu Ala Ser Ala Gly Phe Tyr Tyr Val Gly Arg  
 20 25 30  
 Asn Asp Asp Val Lys Cys Phe Gly Cys Asp Gly Gly Leu Arg Cys Trp  
 35 40 45  
 Glu Ser Gly Asp Asp Pro Trp Val Glu His Ala Lys Trp Phe Pro Arg  
 50 55 60  
 Cys Glu Phe Leu  
 65

<210> 88

<211> 46  
 <212> PRT  
 <213> Homo sapiens

<400> 88

~~Glu Gln Leu Arg Arg Leu Gln Glu Glu Arg Thr Cys Lys Val Cys Met~~  
 1 5 10 15  
 Asp Lys Glu Val Ser Val Val Phe Ile Pro Cys Gly His Leu Val Val  
 20 25 30  
 Cys Gln Glu Cys Ala Pro Ser Leu Arg Lys Cys Pro Ile Cys  
 35 40 45

<210> 89  
 <211> 68  
 <212> PRT  
 <213> Mus musculus

<400> 89

Glu Leu Tyr Arg Met Ser Thr Tyr Ser Ala Phe Pro Arg Gly Val Pro  
 1 5 10 15  
 Val Ser Glu Arg Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Val  
 20 25 30  
 Asn Asp Lys Val Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp  
 35 40 45  
 Lys Gln Gly Asp Ser Pro Val Glu Lys His Arg Gln Phe Tyr Pro Ser  
 50 55 60  
 Cys Ser Phe Val  
 65

<210> 90  
 <211> 67  
 <212> PRT  
 <213> Mus musculus

<400> 90

Glu Glu Ala Arg Phe Leu Thr Tyr Ser Met Trp Pro Leu Ser Phe Leu  
 1 5 10 15  
 Ser Pro Ala Glu Leu Ala Arg Ala Gly Phe Tyr Tyr Ile Gly Pro Gly  
 20 25 30  
 Asp Arg Val Ala Cys Phe Ala Cys Gly Gly Lys Leu Ser Asn Trp Glu  
 35 40 45  
 Pro Lys Asp Tyr Ala Met Ser Glu His Arg Arg His Phe Pro His Cys  
 50 55 60  
 Pro Phe Leu  
 65

<210> 91  
 <211> 68  
 <212> PRT  
 <213> Mus musculus

<400> 91

His Ser Ala Arg Leu Arg Thr Phe Leu Tyr Trp Pro Pro Ser Val Pro  
 1 5 10 15  
 Val Gln Pro Glu Gln Leu Ala Ser Ala Gly Phe Tyr Tyr Val Asp Arg  
 20 25 30

Asn Asp Asp Val Lys Cys Leu Cys Cys Asp Gly Gly Leu Arg Cys Trp  
           35                          40                          45  
 Glu Pro Gly Asp Asp Pro Trp Ile Glu His Ala Lys Trp Phe Pro Arg  
           50                          55                          60  
 Cys Glu Phe Leu  
 65

---

<210> 92  
 <211> 38  
 <212> PRT  
 <213> Mus musculus

<400> 92  
 Glu Arg Thr Cys Lys Val Cys Met Asp Arg Glu Val Ser Ile Val Phe  
   1                          5                          10                          15  
 Ile Pro Cys Gly His Leu Val Val Cys Gln Glu Cys Ala Pro Ser Leu  
           20                          25                          30  
 Arg Lys Cys Pro Ile Cys  
           35